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retro GAMER ANNUAL

VOL. 11

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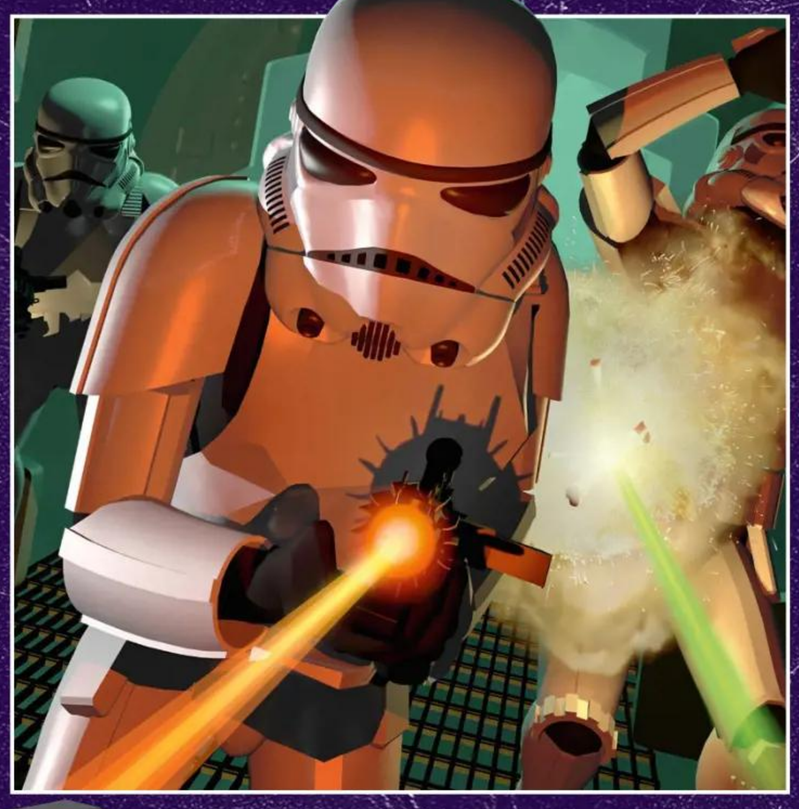

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FUTURE

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WELCOME TO THE

retro GAMER ANNUAL

Are you ready to take a trip into gaming's rich and glorious past? You are? Then join us as we look back at some of the biggest titles to light up the world of gaming. We've hand-picked some of the greatest features from the last year of the magazine, which will take you through an exciting journey and highlight some of the greatest games of the last 40 years. We go behind the scenes of Rare, from its Ultimate days to its success with Microsoft, uncover the origins of the *Call Of Duty* series, examine the impact of Hideo Kojima's *Metal Gear Solid* and learn how Sega created *Sonic The Hedgehog 3* and its innovative sequel *Sonic & Knuckles*. You'll discover the best games by Brøderbund, learn why *California Games* is still a classic, find out how *Grand Theft Auto: Vice City* was created and much more. Enjoy.

FUTURE

Future PLC Quay House, The Ambury, Bath, BA1 1UA

Retro Gamer Annual Editorial
Editor **Darran Jones**
Designer **Jon Wells**
Head of Art & Design **Greg Whitaker**
Editorial Director **Jon White**
Managing Director **Grainne McKenna**

Retro Gamer Editorial
Editor **Darran Jones**
Designer **Andy Salter**
Editorial Director **Tony Mott**
Senior Art Editor **Warren Brown**

Contributors
Adam Barnes, Martyn Carroll, Paul Drury, Graeme Mason, Rory Milne, Jeremy Peel, Nick Thorpe

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Advertising
Media packs are available on request
Commercial Director **Clare Dove**

International
Head of Print Licensing **Rachel Shaw**
licensing@futurenet.com
www.futurecontenthub.com

Circulation
Head of Newstrade **Tim Mathers**

Production
Head of Production **Mark Constance**
Production Project Manager **Matthew Eglinton**
Advertising Production Manager **Joanne Crosby**
Digital Editions Controller **Jason Hudson**
Production Managers **Keely Miller, Nola Cokely, Vivienne Calvert, Fran Twentyman**

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retro GAMER ANNUAL

THE ULTIMATE GUIDE TO CLASSIC VIDEOGAMING

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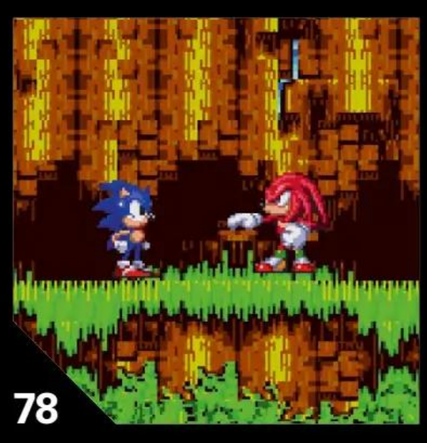
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INSIDE THE ATARI 2600

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BARNSTORMING, MEGAMANIA, FROSTBITE AND MORE

DAVID CRANE
PITFALL!, CANYON BOMBER, CIRCUS CONVOY AND MORE

JON MIKULA
MR RUN AND JUMP

ALEX PIETROW
ASTRONOMER, MONKEY KING

BOB POLARO
DEFENDER, DESERT FALCON, BUGS BUNNY AND MORE

ATARI'S SEVENTIES CONSOLE MIGHT HAVE BEEN A SMASH HIT WITH PLAYERS, BUT ITS UNIQUE HARDWARE AND SEVERE LIMITATIONS POSED A NOTORIOUSLY TRICKY CHALLENGE FOR DEVELOPERS. WE SPEAK TO CODERS PAST AND PRESENT TO EXPLAIN JUST HOW THE SYSTEM WORKS

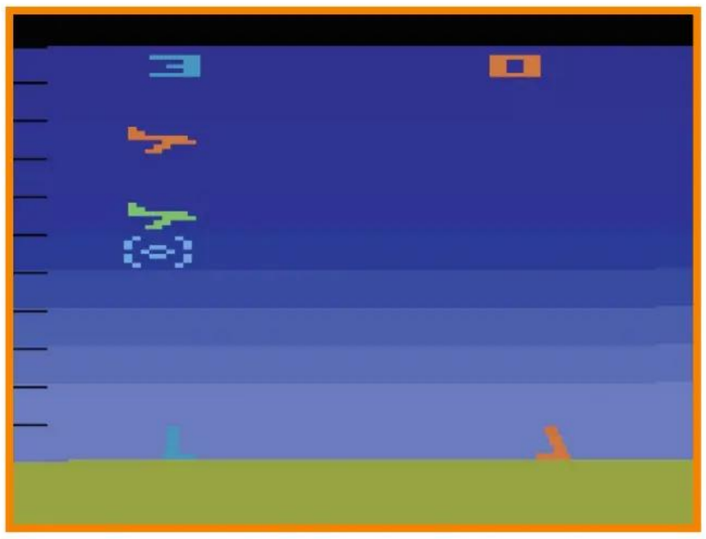
WORDS BY NICK THORPE

True revolutions in the field of game-console engineering are a rarity, but there's no doubt that the Atari 2600 fits the bill. The earliest home consoles had been dedicated *Pong* consoles and similar devices, which were designed to play only the games that they were built for, with no capability for expansion. The Atari 2600 was a completely different proposition, with its use of a programmable CPU and ROM cartridges allowing for a theoretically unlimited number of games. Though Atari's console wasn't the first to offer this capability – the Fairchild Channel F claimed that distinction in 1976 – it did popularise the concept, selling millions of units and setting the standard for how future gaming hardware worked.

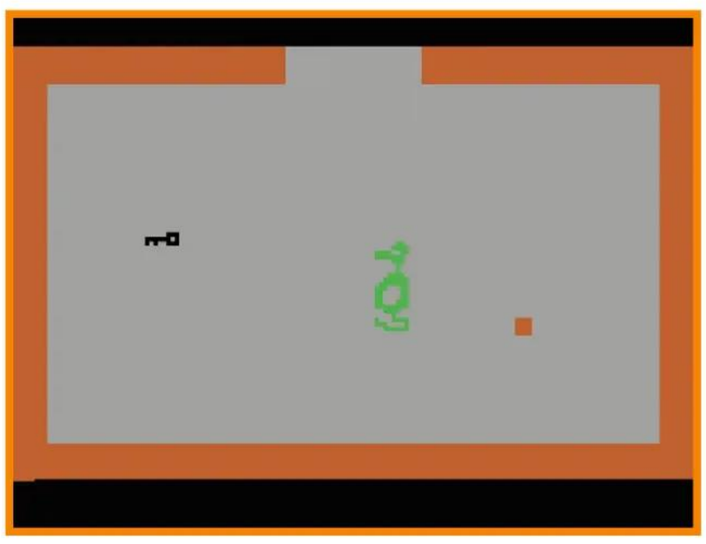
The concept for such a console originated at Atari's subsidiary Cyan Engineering, but the hardware required to create it as a consumer product didn't become affordable until the mid-Seventies. In September 1975, a team at MOS Technology headed by former Motorola engineer Chuck Peddle introduced the affordable 6502 CPU, which cost just $25 ($143, adjusted for inflation). As well as being more affordable than competing processors from Intel and Motorola, which had been introduced at $360 each ($2,060 today), it was more capable. However, even at $25 the 6502 was too expensive for a home console, and Atari ultimately negotiated for the cost-reduced variant 6507 CPU and 6532 RIOT chips at $12 a pair.

The graphics hardware, originally codenamed Stella after Joe Decuir's bike, was also developed at Cyan. Jay Miner ultimately finished this while Joe Decuir worked on the rest of the system, and it was named the Television Interface Adapter. Due to the high price of RAM – $195 ($1,116 today) for four kilobytes in October 1975 – this chip doesn't include a framebuffer, which is memory that graphics are typically written to before being drawn to the screen. This allowed for a high level of flexibility, but also placed a major burden on programmers. The Atari 2600 launched in September 1977, at a price of $199 ($1,011 today).

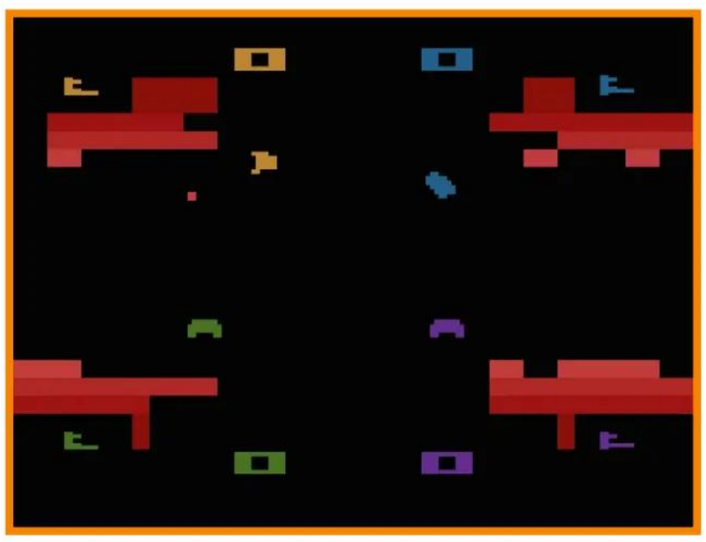
» [Atari 2600] *Combat* is the Atari 2600 used as intended, and looks exceptionally basic compared to later games.



» [Atari 2600] The trick of reusing player sprites was in use as early as *Air Sea Battle*.



» [Atari 2600] Graphics on the console sometimes had to be rather abstract, as *Adventure*'s dragon shows.



» [Atari 2600] The fact that *Warlords* handles up to three computer players is a minor miracle.

» [Atari 2600] *Donkey Kong*'s asymmetrical girder layout requires rewriting playfield data mid-scanline.

What did the design decisions mean in practical terms? "The 6507 was in a smaller IC package that cost a little less. It still had a full 6502 die inside, but there weren't enough pins to bring all of the lines of the 6502 to the outside world," says David Crane, whose Atari 2600 games include *Pitfall!*, *Outlaw* and *Circus Convoy*. "Three of the lines they left disconnected were address lines that allowed the 6502 to address 64KB of memory. Abandoning those address lines limited the 6507 to access 4KB in the ROM slot. The designers of the 2600 never planned on ROMs bigger than 4KB, so it seemed to be no big deal." Indeed, the earliest games such as *Combat* and *Indy 500* shipped on 2KB ROM chips. "It became a problem as games needed larger ROMs, leading to more and more complex bank-switching schemes to allow 8K and larger games," David recalls.

Bob Polaro, programmer of games such as *Defender, Road Runner* and *Rampage*, remembers the development tools used at Atari.

"Along with downloading to a 2600 connected to a TV, there was the HP 1611A Logic Analyzer and DEC PDP-11 console station," he says. For debugging, "the Logic Analyzer was the most useful tool, which would display the cycles used as well as a specific hardware register's value." Steve Cartwright, who programmed games such as *Barnstorming*, *Frostbite* and *Megamania*, remembers a similar environment. "At Activision we used a custom-built hardware emulator connected to a modified 2600. Software was a custom-built assembly language assembler and debugger. We used ADM3A dumb terminals connected to a PDP-11."

> "IT WOULD LITERALLY TAKE MONTHS TO WRITE THE CODE TO DISPLAY ALL THE MOVING OBJECTS"
> **STEVE CARTWRIGHT**

What was the hardware emulator connected to the console? "The simplest way to develop

» [Atari 2600] Scrolling was tough for the Atari 2600, but games like *Defender* approximated it well.

» [Atari 2600] Activision's games frequently looked excellent, with highly detailed characters and backgrounds.

a game for any ROM-based game console was to use a ROM Emulator, which could be wired to the cartridge slot as if it was a ROM in a plastic cartridge. We would occasionally use this commercially available technology when we started working on a new console," says David. "Then, as quickly as we could, we would make a development system, or blue box, specifically for the system. This meant designing a custom circuit and circuit board. I made many such systems over the years and usually used a modular aluminium project box as an enclosure. The brand I used had blue powder-coated metal parts which is where the term 'blue box' came from," he continues. "The blue box I designed at Activision for the Atari 2600 connected to the cartridge slot, but with RAM directly wired into the CPU's address space. The RAM still pretended to be the cartridge but it was more easily uploaded with test code and also allowed for special debugging tools."

David goes on to detail the functions of the custom software Steve mentioned. "We actually had pretty good tools because we wrote them ourselves," he says. "The software in the blue box allowed us to temporarily modify game code or RAM variables during play. But far more important was the ability to set breakpoints in the execution thread to freeze time and inspect the code flow one instruction at a time – a process that was otherwise happening in microseconds. Modern debugging tools are not better, they are just integrated into a development environment with such features as auto-compile [and] multiple screens."

Graphics were the trickiest part of creating Atari 2600 games. Because of the lack of a framebuffer, the TIA chip draws graphics line by line, and on each scanline there were a limited number of resources. You had one fixed background colour, as well as a 20-bit

» [Atari 2600] *Megamania* features smooth enemy movements in various directions, which is quite impressive.

UNDER THE HOOD

TAKE A PEEK AT THE MOTHERBOARD OF ATARI'S CLASSIC CONSOLE

TIA

1 The TIA, short for Television Interface Adapter, is the chip that provides the graphics and sound capabilities for the console. This chip is also included in Atari 7800 consoles for backwards compatibility and sound generation.

MOS TECHNOLOGY 6507

2 A MOS Technology 6507 chip serves as the CPU of the Atari 2600. This is a cost-reduced version of the 6502, which is used in Atari's 8-bit computers, the Commodore 64 and many other systems.

MOS TECHNOLOGY 6532

3 The MOS Technology 6532 is an integrated chip that holds 128 bytes of RAM, handles input and output and provides a programmable interval timer. It's nicknamed RIOT (RAM, IO, Timer).

CARTRIDGE SLOT

4 This is the cartridge slot. On six-switch consoles this is mounted at an angle, but on four-switch consoles the motherboard itself is angled instead, so the cartridge slot is mounted normally.

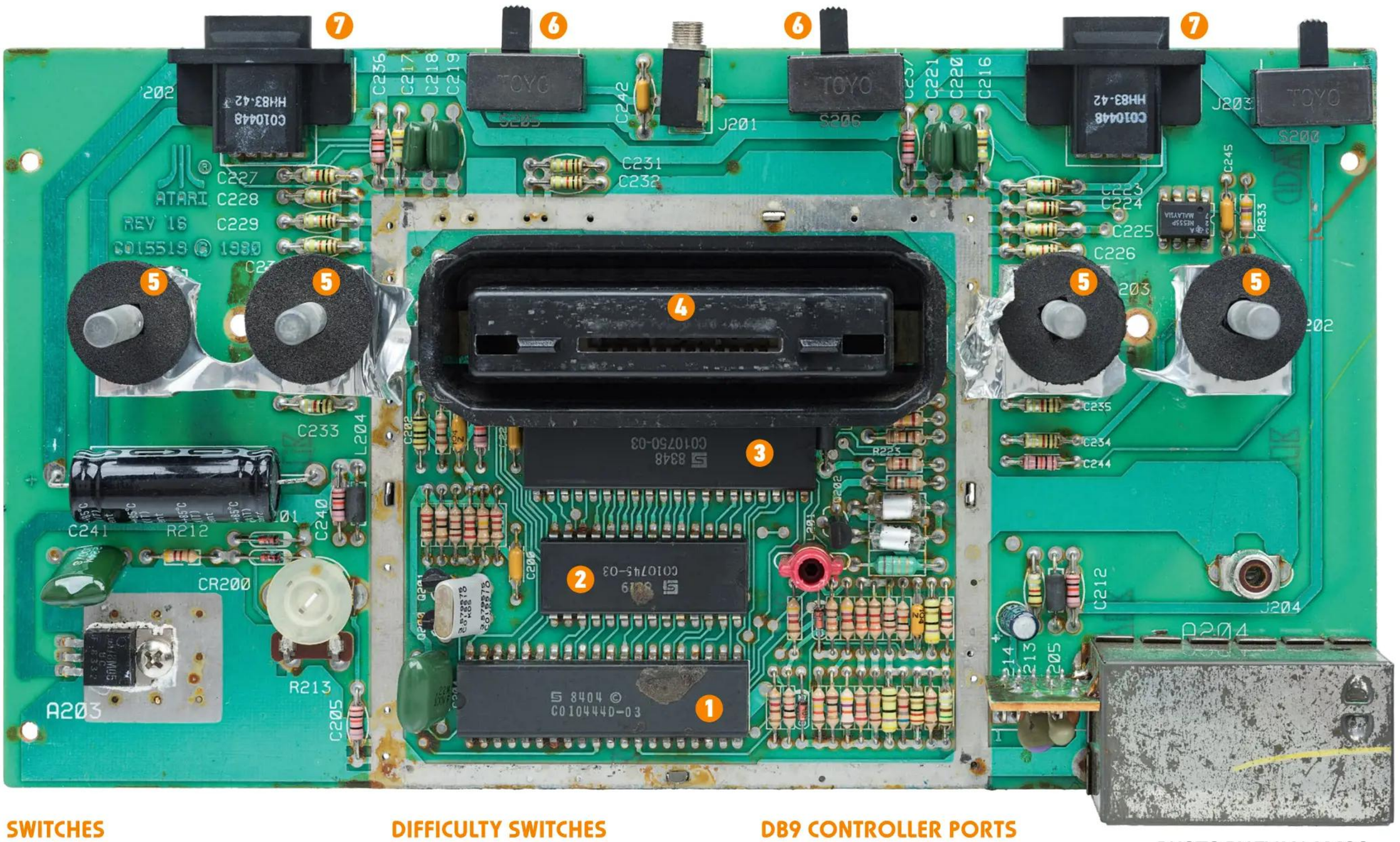


PHOTO BY EVAN AMOS

SWITCHES

5 These are the Power, TV Type, Game Select and Game Reset switches. On six-switch consoles they are mounted on their own board, but the four-switch motherboard seen here has them integrated.

DIFFICULTY SWITCHES

6 The Left Difficulty and Right Difficulty switches originally sat on a separate board with the other switches, but were moved to the rear of the console when the four-switch model was introduced.

DB9 CONTROLLER PORTS

7 The two DB9 controller ports are part of the motherboard on all models. On the six-switch systems they're close together and horizontally orientated, but far apart and angled on four-switch consoles.

ANATOMY OF A PITFALL!

HERE'S HOW DAVID CRANE MADE CLEVER USE OF THE CONSOLE'S CAPABILITIES TO CREATE THIS GRAPHICALLY IMPRESSIVE GAME

HEADS-UP DISPLAY

1 Since no other game elements share this part of the screen, player sprites can be used to display the timer, score and lives remaining.

BACKGROUND MIRRORING

2 The Atari 2600's background graphics register holds enough information for half a screen, which is then mirrored or repeated. In *Pitfall!*, it is always mirrored – any asymmetrical elements use sprites.

BACKGROUND COLOURS

3 The background can only have two colours on any scanline – but as you can see, these colours are changed as the screen is drawn to create the trees, the ground and the water, and the underground.

TREE BRANCHES

4 The background graphics are too coarse to draw fine details, and both colours are already used. Since Harry and the enemies never occupy this region of the screen, player sprites are used here.

VINE

5 The ball sprite is used to draw this, as it is independent of player sprites. Notice that because it has to share the background colour, the top of the vine is green until the tree trunks are drawn.

HARRY

6 Harry is the most complex graphical element on the screen. The player sprite's colour is changed to represent his hair, skin, top and trousers. Note that his hands are in line with his head, and his knees don't come up past his waist.

CROCODILES

7 Since Harry will occupy the same space as them and interact with them, the crocodiles use the second player sprite. The limitations of sprite repeating mean they appear at fixed distances.

SCORPION

8 The second player sprite is changed to the scorpion for the underground. Only one non-Harry sprite ever appears in each region of a screen, so you'll never see both a scorpion and a wall, for example.

ACTIVISION LOGO

9 Once again, the background graphics are far too coarse for this text, so both sprites are used in alternating fashion to draw it. While one sprite is drawn, the other is being altered.

HMOVE AREA

10 *Pitfall!* should suffer from HMOVE lines, but gets around it by simply writing to that register on every scanline to create a solid black bar. Many Activision games used a similar technique.

playfield of a single colour. The playfield only covered half of the screen, and had to be mirrored or repeated on the right. Two eight-pixel player sprites were available, each of which could have their own colour, as well as two one-bit missile sprites which shared the colour of their respective player. Then there was the ball sprite, another one-bit sprite which shared the playfield colour. The data in these registers had to be updated for every scanline to draw complex graphics.

Most of the CPU time, 76 cycles per scanline, was spent driving the TIA. "It was *extremely* limiting, and severely restricted what the game could display. For most games the first third or more of the development schedule was dedicated to using those 76 cycles to display an acceptable game screen," says David. Steve remembers the creation of graphics being similarly intensive. "It would literally take months to write the code (the 'kernel') to display all the moving objects," he tells us. "*Megamania* was, at its time, the most complicated kernel ever attempted. There were multiple rows of multiple objects moving both horizontally and vertically – with the 'ball' object (the player's missile) and two enemy missiles passing vertically through all the moving and scrolling rows of enemy ships."

» [Atari 2600] *Pole Position* makes clever use of the missile and ball sprites to draw its roads.

How was it possible to create multiple rows of objects with just five sprites, three of which were extremely limited? "There were registers called NUSIZ0 and NUSIZ1 that were used to control the sizes and number of copies for each player," says Bob. These allowed for up to three copies of the same sprite per scanline, or a single enlarged version of one. "If you made triple copies and changed the values within the kernel at the right cycle time you can make what was called the six-character score kernel." The missile and ball sprites could also be stretched, which Bob used for the missile firing in *Defender*. In David's opinion, these capabilities were invaluable. "Stretch and multiple copies of sprites was an afterthought in the hardware design, but without those the 2600 would have been obsolete in two years rather than the more than ten years that it was able to compete with newer systems," he explains. "Without those features, 2600 games would all look like *Tank*."

» [Atari 2600] Steve Cartwright was able to animate Activision's famed sunset gradient in *Frostbite*.

> "ON THE ONE HAND WE HAD A LOT OF CONTROL OVER THE DISPLAY ON THE TV. ON THE OTHER HAND EVERY CHOICE COULD SIGNIFICANTLY RESTRICT OTHER ASPECTS OF THE GAME"
> **DAVID CRANE**

Though a player sprite and its copies could appear only once per scanline, they could appear multiple times per frame, with the data being changed as the screen was drawn. However, this caused a peculiar graphical quirk. "HMOVE was the register that moved the players," Bob tells us. Whenever this register was written to, a black line would appear on the left of the display. "I remember storing a zero in the leftmost bit of the playfield to cover up the unsightly HMOVE lines." Other games would simply write to HMOVE on every scanline, creating a solid bar on the left of the screen.

The real-time nature of the TIA even allowed for the ability to change the playfield data while a scanline was being drawn, in order to achieve an asymmetrical background. "The drawback is that doing so used up about half of our precious 76 cycles, and it severely limited what else could be displayed in that area of the screen," David explains. "It also used up a lot of the 128 bytes of RAM. On the one hand we had a lot of control over the display on the TV. On the other hand every choice could significantly restrict other aspects of the game." Nevertheless, this did see real-world use – *Donkey Kong*'s first stage would have been impossible without it, as would the desert background of Bob's *Road Runner*. "*Barnstorming* is a typical example – the body of the plane is actually a playfield object," says Steve. "After the plane is drawn on the left side of the screen, the playfield register is cleared so the plane doesn't re-appear on the right side of the screen."

Activision's games typically had exceptional graphics, and this was no accident. "At Activision it was not unusual for a game idea to be abandoned if the designer/programmer couldn't get a top-notch game display to work to our high standards (such as avoiding flicker etc)," David remembers. "Only after figuring out how to make the display work would we invest the time and energy to write the gameplay code." Steve says the company used "the cheapest Montgomery Ward TVs we could buy" during development, explaining

» [Atari 2600] Vertical colour changes in sprites are more common than horizontal ones due to the hardware.

» [Atari 2600] Later games like *Solaris* really pushed the console with smoothly moving space battles.

▶ that, "The theory was that if we could make the colours look good on those TVs, the games would look great on any customer's TV." This was apparently not a universal practice, as Steve elaborates. "Atari, on the other hand, developed their games using hi-res Sony colour monitors. As a result, when customers got the games home, there was often annoying colour bleed and colour artefacting on 'average' TV sets that hadn't shown up on their hi-res colour monitors."

So with such intense activity directed towards graphics, where does the game logic happen? "You get 30 scanlines worth of overscan, and nothing's getting drawn there so that's just free space where your program can do kind of a lot of heavy lifting" says Jon Mikula, programmer of new Atari release *Mr Run And Jump*. "Then once it's done with overscan, it's vertical blank, which is the cathode-ray tube resetting itself to the top-left corner of the screen. So that winds up being another big chunk of time. So between overscan and VBlank, that's the meat of where your game code is running," he continues. "So that's where I handled collision, level loading, movement, reading inputs, playing sounds and all that kind of good stuff. And there is time when it hits the right side of the screen and it goes to the left, and that's called horizontal blank. That gives you another few cycles for which you can eke out some more code if you really wanted to."

» [Atari 2600] *Fatal Run* was a 32KB cartridge – eight times what the console was designed to handle.

"Because all resources were extremely limited we had to make trade-offs," David recalls. "For example, you could speed up the code by writing in-line code, but using a loop used less ROM. Every trade off decision was based on what resource was slightly more available. But that is all relative – there was never enough ROM, RAM, or CPU time to do everything we wanted," he continues. "One trick every game used was the combining of data tables. Since memory was so limited, if a data table ended with the same number that another table started with, we'd overall the tables slightly to save even 1 or 2 bytes," says Steve. "We were always so desperate for resources that one byte could make a difference," David tells us.

> "THE COMMUNITY IS VERY ACTIVE, FRIENDLY AND GENERALLY WELCOMING TO NEWCOMERS"
> **ALEX PIETROW**

One thing that we haven't mentioned much is sound, which is generated by the TIA and extremely limited – this is unsurprising, given that the console was designed at a time when background music wasn't even common in arcade games. That said, having music wasn't an impossibility, as David's later game *Skate Boardin'* shows. "The 'music' playing during *Skate Boardin'* was a simple baseline and snare drum, and used only the built-in capabilities of the 2600. A short burst of white noise sounds like a snare drum, and the 2600 sound circuit could play beeps and bloops. Only a fraction of the tones from the 2600 were chromatic, ie real notes," he explains. "That type of music took very little CPU time… a note would be started on one frame and turned off the next, creating a short tone.

"The biggest challenge in creating a ditty on the 2600 was writing a song using only eight or so notes. That said, a very talented composer can do it. For Garry Kitchen's *Pressure Cooker* a professional jingle writer was hired to write game music. Garry told him to write anything that fit the game theme, but use only the eight notes marked on his toy Casio keyboard. I wish I could have been there to see his face! The end result was brilliant."

The story of the rise and fall of the Atari 2600 and its connection to the North American videogame market crash is exceptionally well-known, but what is discussed less often is that the console did benefit from the market's recovery. "We developed and published *Skate Boardin'* under the Absolute Entertainment label because Toys R Us reached out us to say that they were receiving a significant number of requests for new 2600 games after the game business recovered from the crash," David explains. "By that time not even Atari had retained the expertise to make games for the 2600 and we had several OGs in the company that could oblige." Development of new games continued until 1990, with *Fatal Run* and *Klax* being the final releases.

Even then, the story of Atari's console wasn't over. The popularity and unique design of the Atari 2600 inspired hobbyist coders to create their own Atari 2600 games, and there's a thriving homebrew scene today. "I like it because it is such a challenge to make games on this platform," says Alex Pietrow, programmer of *Astronomer* and *Monkey King*. "You have some very strict limitations that you have to deal with, and that means that you have to be creative with your solutions. Of course, this also applies to modern games in some ways but that industry has ballooned so much over the years that you have to have large budgets, and teams of people to get things done, while this can still be managed by one person. The community is very active, friendly and generally welcoming to newcomers, so that was also a motivator for sure." ▶

FLICKER FACTOR

WHAT'S BEHIND THE FLICKERING SPRITES YOU SEE IN SOME ATARI 2600 GAMES?

With just five hardware sprites to play with, and three of them carrying heavy restrictions, the Atari 2600 posed a considerable challenge to anyone seeking to convert more complex arcade games with plenty of moving parts. Fortunately, the Atari 2600 allowed for the replication and reuse of sprites, greatly easing this burden. By using the debug features of the emulator Stella, we can see how programmers got maximum utility from these features, and learn why flickering was sometimes unavoidable.

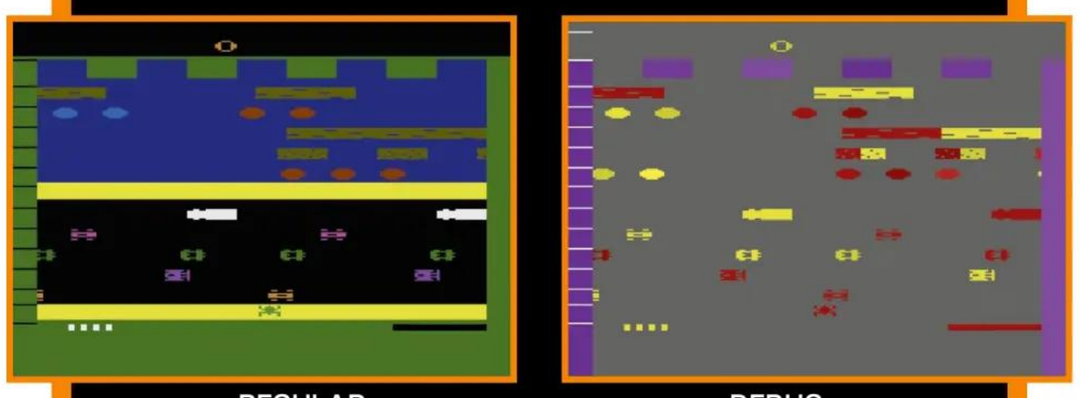
SPACE INVADERS

Both player sprites are employed to draw the enemies. Each sprite is drawn three times per row for a total of six enemies. Wide spacing is used so that data can be swapped out between each drawing. Shots use the ball sprite and can overlap, so player and enemy shots are flickered.

REGULAR DEBUG

FROGGER

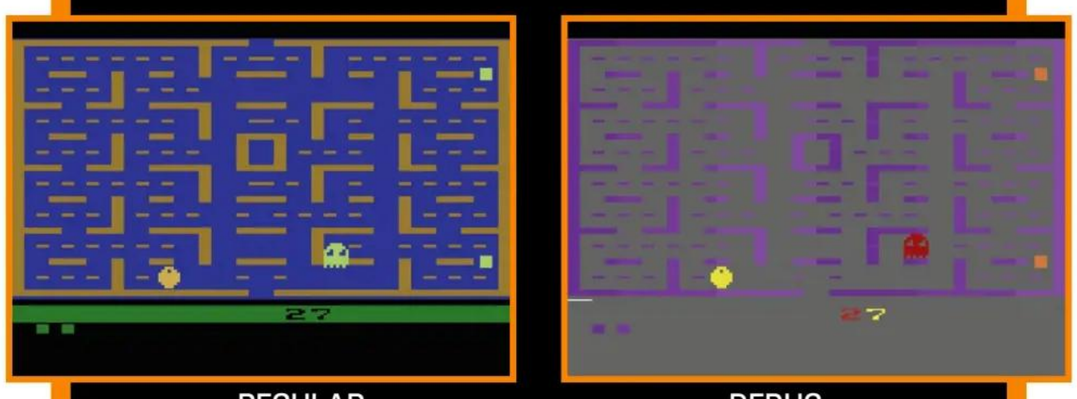
This complex game area features rows of multiple objects, and again uses both player sprites to draw vehicles, logs and more. But since Frogger himself is a player sprite, flickering the row he occupies is a necessity – Frogger and Lady Frog are drawn on one frame, the objects on the next.



REGULAR DEBUG

PAC-MAN

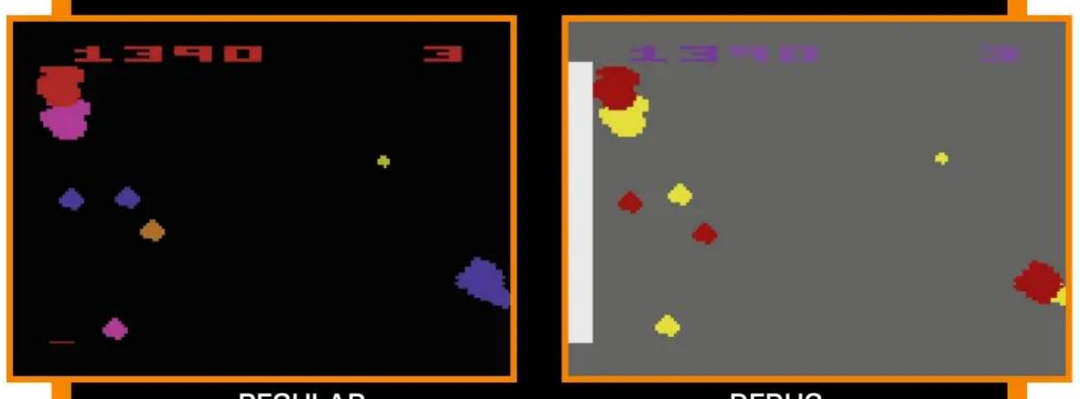
The ghosts here can't use replication as they need to move independently, and they may all appear on the same scanline as Pac-Man. To get around this problem, the game simply draws a single ghost during each frame, producing the prominent flickering effect that the game is infamous for.



REGULAR DEBUG

ASTEROIDS

Since both the player and asteroids can occupy any part of the screen, full-screen flickering is utilised with the player drawn on one frame and the asteroids drawn on the other. Both player sprites are used for the asteroids, with size and colour modified repeatedly as the screen is drawn.



REGULAR DEBUG

BACKGROUND PLAYFIELD PLAYER 0 PLAYER 1 MISSILE 0 BALL HMOVE LINES

EXTRA CHIPS

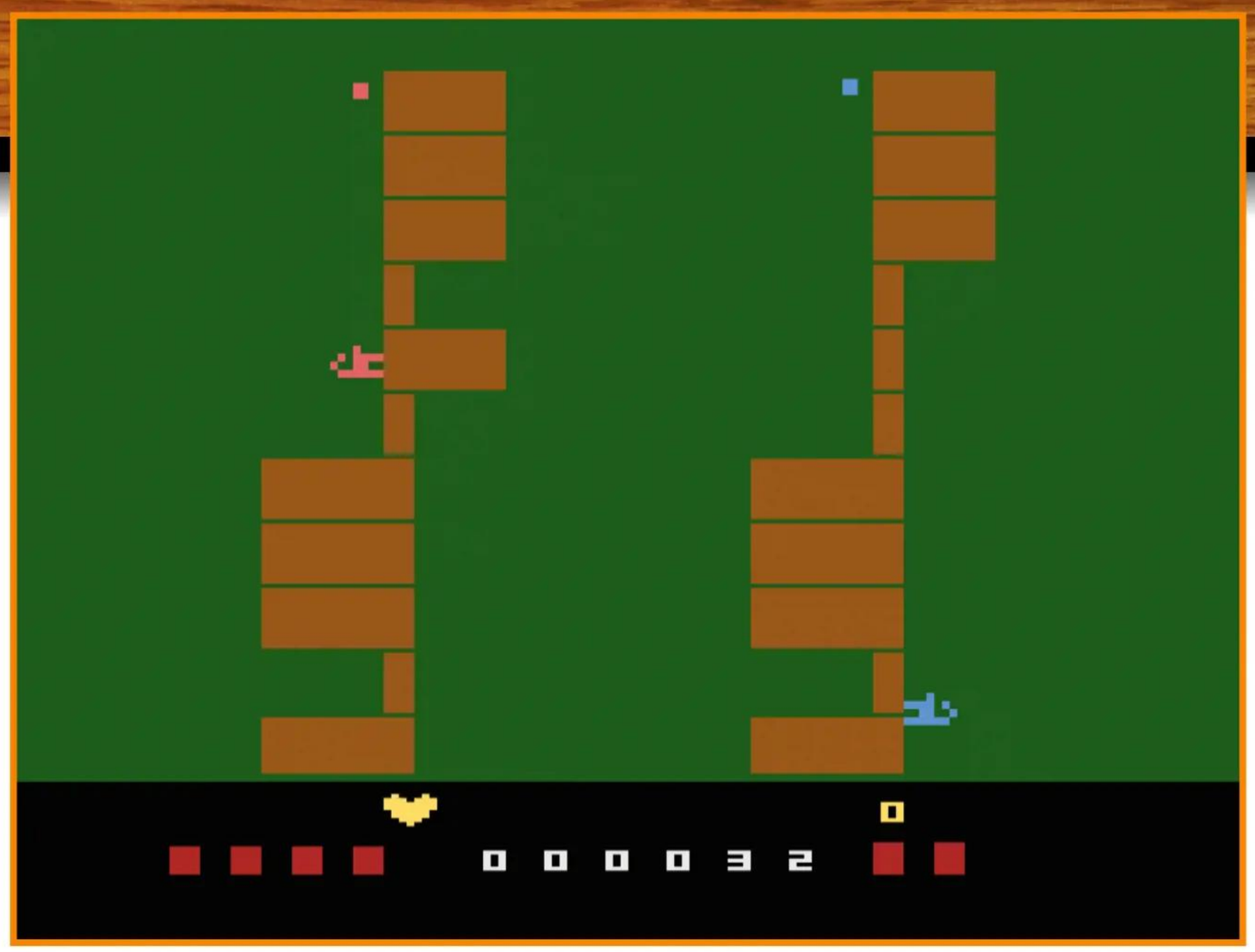
COULD ADD-ON CHIPS PUSH THE ATARI 2600 EVEN FURTHER?

One of the advantages of cartridge-based games is the ability to add extra processing power with on-board chips. Though many players would become familiar with this in later years thanks to examples like the Super FX used in SNES games, David Crane actually did so early on with *Pitfall II: Lost Caverns*, which arrived when the Atari 2600 was already over six years old. "Designing a custom IC to go into the cartridge was my attempt to squeeze a couple more years of life out of our beloved 2600," David explains. "It certainly added cost (although I don't know how much) so it made sense to use for a blockbuster like *Pitfall!*'s only 2600 sequel, but might be hard to justify for a lesser title.

"It was called the DPC for Display Processor Chip, but as a lover of word play, it was actually named using my initials. It let us squeeze eight or ten cycles out of our real-time code, effectively expanding what we could do in our 76 cycles. It also gave us three-voice music that made the *Pitfall II* theme music possible." *Pitfall II* exceeded Activision's sales expectations despite the major downturn in the console market and a relatively high retail price of $34.95, but the DPC was never used in any further releases. "I would have loved to use it again to see what more I could make my design do, but that was pretty much the end of top-of-the-line 2600 game design," says David.

» [Atari 2600] *Pitfall II*'s jaunty theme music wouldn't have been possible without the Display Processor Chip.

» [Atari 2600] *Pitfall II* had smooth vertical scrolling, unlike the first game's flick-screen action.



» [Atari 2600] Alex Pietrow uses Batari Basic, which is useful for those starting out in Atari homebrew.

Jon feels similarly. "I kind of took on *Mr Run And Jump* as a programming challenge, because the 2600 is this notoriously finicky, difficult to work with platform to develop for," he tells us. "What makes it appealing to work for it is the scale of it. It's a platform that you don't necessarily have to make a ton of assets for, you don't have to worry about making textures and being a good artist, or necessarily composing music and pumping those out to files and things like that, it's all very raw programming."

The community forum AtariAge is an extremely important resource for Jon. "They have a whole section on homebrew development, and I believe there's a post somewhere on how to get started. They have a collection of stuff, so you can get the linker which you pump your assembly code into, and then that spits out your 2600 executable. So that's just available for download up there. There's another post where someone broke down how to write assembly code for the 2600 processor." Older resources have also proven useful to him. "The actual Stella manual from the Seventies, that's a surprisingly great resource. You'd think maybe it would be slightly out of date or written weirdly, but it's very readable and actually extremely direct." When asked what resources he uses, Alex tells us, "The main one is the AtariAge forums, where there are many people who know a lot about the system and how to program for it. Also, the website randomterrain.com is very helpful."

» [Atari 2600] *Mr Run And Jump* is the first new official cartridge game that Atari has released in decades.

While Jon went straight down the assembly code route, Alex has taken a different approach. "As of yet I only work with Batari Basic, which is an introductory programming language for the Atari 2600 that makes it a lot easier to program things," he explains. "Of course it also limits what you can do, but one has to start somewhere!" However, even with an introductory language, the limits of the system prove tricky due to the limited amount of variables and memory available. "You need to use various tricks to get around what you are doing, like using the individual bits of a variable in order to store eight Booleans in one variable," he explains. "You also learn binary math tricks to make calculations less taxing and minimise the amount of variables that they use. Some of these tricks I actually use in my day job now, where I work with large amounts of astronomical data."

Even David has returned to the Atari 2600 in recent years, developing *Circus Convoy* with Garry Kitchen. How did this compare to the old days? "First and foremost it was as challenging as before, which as I have said was the most fun part," he replies. "But creating *Circus Convoy* entailed much more than writing game code. To bring you *Circus Convoy* in a physical cartridge, complete in a beautiful colour box with manual etc, meant recreating all of the subsystems that we had 40 years ago.

"Long gone were our debugging tools, our drawing tools, SFX tools, etc. So I first had to

recreate many of those. I put a good three to four months into a 2600 sprite-drawing tool that let you use all of the capability of the hardware. Between the two of the original founders of Audacity Games I am the more technical and Garry is by far the more artistic. I let him loose with that tool and he created sprites unlike any that have ever been seen. For example, the giraffe that pokes his head out of the circus car has some of the most innovative uses of colour on a 2600 sprite and the player doesn't even notice because it just looks perfect. And the snake that takes up a third of the screen – OMG."

» [Atari 2600] The details on the giraffe in *Circus Convoy* are rather extraordinary for the hardware.

» [Atari 2600] *Ms Pac-Man* solved the original's flickering by reusing sprites across different scanlines.

Like many modern Atari 2600 games, *Circus Convoy* has been released on a cartridge, which is no small feat as David explains. "I put on my electrical engineering hat and designed a circuit board to go inside a cartridge. I put on my industrial engineering hat and designed a new plastic case capable of being injection moulded." Further coding outside of the game was also needed. "I envisioned and implemented a number of security features to prevent (or at least reduce) pirating. I built a web store from scratch, created a marketing website, back-end server software, innovative use of QR codes, a global high-score board and compiled a list of people who really wanted to hear from us by email," he adds.

"There was a massive amount of work that went into that copy of *Circus Convoy* sitting on your desk or shelf. It turned out to be a great game (if I do say so myself), and such a great result made all of the work worthwhile and rewarding," David says, before concluding, "comparing it to what it was like in the heyday, we missed the hundreds of Activision staff that took a lot of this workload off the game designers back in the day."

Although Atari 2600 games are simple by today's standards, the process of making them was anything but simple. The pioneering coders of the day saw the restrictions the Atari 2600 imposed and imagined inventive ways to bypass them, creating classics like *River Raid*, *Adventure* and *Yars' Revenge* that were vastly more complex than anything that the team at Cyan Engineering had imagined for the console. We doubt that anyone involved in engineering the Atari 2600 in the Seventies imagined that people would still be developing games for it so many decades later, and we can't imagine that people like David thought that they would be doing that development, but they do. Each one is drawn to console not because it's the best tool for the job, but for the challenge involved in creating something that would be trivial to make on hardware even marginally more modern. We can't think of a better way to pay tribute to the coders of classic Atari 2600 games than to take on that daunting task. ✱

TIA DECLASSIFIED

HOW THE ATARI 2600'S GRAPHICS CHIP DIFFERED AROUND THE WORLD

The Television Interface Adapter had somewhat different capabilities depending on the television system it was designed for. "The hardware and programming were identical until the final step of translating a digital code to colours," says David Crane. "The way the hardware worked, and probably due to cost considerations, SECAM colours were muted and PAL colours showed up at different positions on the colour wheel. We just did our best with the colours that were available." That wasn't too hard for PAL consoles, which have access to 104 colours compared to the 128 of NTSC consoles, but owners of SECAM consoles in countries like France had to make do with just eight colours.

However, as is so often the case when it comes to international gaming hardware, frequency was the problem. "The bigger problem was that both PAL and SECAM used a 50 hertz time base rather than the 60 hertz we worked with in the US," David confirms. "For every game he or she authored, the designer created the alternate versions once the US version was complete. All references to colours had to change, and we had to address the different time bases. Games ran 16% slower and sometimes we had to tweak clocks, timers, and even game rules so that European players could have the same quality gaming experience."

» [Atari 2600] Here's the NTSC version of *Decathlon*, running as it was always intended to run.

» [Atari 2600] There's a colour reduction for the PAL version here, and of course a slightly squashed image.

» [Atari 2600] Here's the SECAM version. It's rather bright, to say the very least.

ULTIMATE GUIDE

CALIFORNIA GAMES

HAVING COVERED THE SUMMER AND WINTER OLYMPICS, AND TAKEN A TOUR AROUND THE WORLD OF SPORT, EPYX STOPPED OFF IN THE GOLDEN STATE FOR THE NEXT ENTRY IN ITS WILDLY POPULAR GAMES SERIES. JOIN US AS WE BASK IN THE SUNSHINE OF CALIFORNIA GAMES

WORDS BY MARTYN CARROLL

Could *California Games* be any more Eighties? With its sunny vibes, wild fashions and goofy excesses, it's hard to imagine how it could be – until you discover that it was almost titled *Rad Sports*!

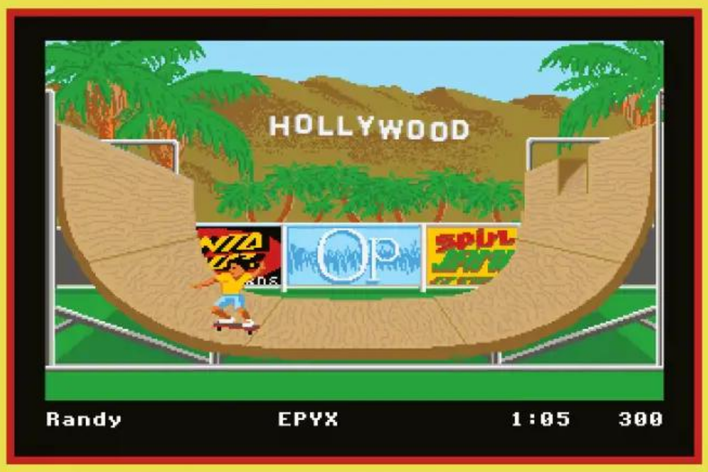
According to project lead Matt Householder, this was the working title during initial development. Elaborating on the story (see **RG** 149), the idea for the game occurred when he and his wife were out walking near their home in San Francisco and some kid tore past them on a skateboard. As they continued walking, he added other alternative sports to the mix – including surfing, roller-skating and BMX racing – and the basic concept for the game was born there and then. We guess that shows the benefits of a stroll in the sunshine.

Although the name would soon change to *California Games*, giving it a sense of place and tying it to the earlier games in Epyx's long-running series, the working title actually served a dual purpose. Yes, *Rad Sports* shoved the Eighties West Coast vernacular front and centre, but it also highlighted what the game offered – a radical departure from what came before.

> "THE SELECTION OF SPORTS WAS WELL BALANCED, CATERING FOR BOTH THRILL AND CHILL SEEKERS"

Epyx's *Summer Games*, *Summer Games II* and *Winter Games* pretty much exhausted the Olympic sports format, which is why the fourth game in the series – *World Games* – broadened its scope to include more eclectic events. However, some of the events were still Olympic sports and the formalities of international competition were retained. *California Games* dispensed with all that, presenting the player with youth-orientated pastimes instead. Whereas in the previous games you chose a country, here you selected a sponsor (most of which were real brands like Santa Cruz Skateboards and Ocean Pacific Apparel). The predecessors played national anthems – in *California Games* the only anthem you heard was the rock 'n' roll standard *Louie, Louie* by Californian Richard Berry (in an early example of music officially licensed for a videogame).

The selection of sports was well balanced, catering for both thrill seekers (BMX, half-pipe and roller-skating) and chill seekers (foot bag and flying disk). The main event however was surfing. Whether it was the most fun to play is debatable, but the breaking wave effect looked so damn impressive that screens of it were front and centre in every magazine advert,



» [Apple IIGS] Skating the half-pipe is *hard*. Get your timing slightly wrong and you're going down.

» [C64] You can bag some bonus points by thwacking that gull with your foot bag.

» [C64] The BMX minigame is better than many of the standalone bike games that were out around the time.

Conversion Capers

WHICH OF THE VARIOUS VERSIONS WERE MEDAL WINNERS?

CALIFORNIA C64

■ The lead version, which the other versions tried to match and, on more advanced hardware, surpass. Their work was cut out, as this is a dazzling release where the presentation and the playability are both best-in-class. For many this remains the definitive version.

CALIFORNIA APPLE II

■ Not the prettiest version, thanks to the hardware's idiosyncratic display, but it does manage to display 16 on-screen colours. The downside of this achievement is that it's slower and less responsive than the C64 game. The music is miles off SID standards too.

CALIFORNIA PC

■ Like the Apple II version, this falls far behind the C64 original. Going head-to-head with the Apple II game, the visuals are comparable (running in VGA mode), but the framerate is smoother and slightly increased. Sonically it sounds worse (if that's possible).

CALIFORNIA AMIGA

■ Developed in the US by Westwood Associates, this stands out as the most polished home-computer version. The surfing screenshot may look underwhelming, but in motion it's, erm, going OFF. The whole game has been put together with clear care and attention.

CALIFORNIA ATARI ST

■ Not related to the Amiga release, this UK-developed conversion isn't as refined in terms of sound and graphics (the animation in particular could be better), but all of the events play as well as you'd hope. The Amiga version wins, but not by very much.

CALIFORNIA APPLE IIGS

■ In the battle of the 16-bit computer ports this finishes a distinct third. Visually it's based on the classy Amiga version, but performance-wise it's lacking with some truly choppy scrolling on the BMX, roller-skating and flying disk events. The music is decent, mind.

CALIFORNIA AMSTRAD CPC

■ Choice Software did a decent job with the ST version, but its 8-bit conversions are [insert surfer slang here for 'very poor']. Everything is off – the graphics, the sound, the controls. The roller-skating event (pictured) is probably the best of a bad bunch.

CALIFORNIA ZX SPECTRUM

■ This makes the weak CPC version look like a gold medal winner. An absence of colour and an overuse of dithered graphics results in an awful-looking game – with playability to match. Hardly worth the 36% *Crash* magazine gave it. What a waste of magnetic media.

CALIFORNIA MSX

■ If you thought the Spectrum version was as low as things could go, say hello to the MSX port. Someone (wisely uncredited) has taken the Speccy code and spent their coffee break making it work on the MSX, with zero optimisations, for a zero-rated result. Bravo.

CALIFORNIA ATARI 2600

■ Another game on the "they converted *that* to the 2600?" list. Well they did, and it's a very credible and playable version. It's also recognisable – although roller-skating and flying disk are missing, and BMXing has been reworked (and is fun in its own right).

FOOT BAGGER

SKATE-BOARDER

CALIFORNIA ATARI LYNX

■ Like the 2600 version, this has been adapted to fit the hardware. Roller-skating and flying disk are out, and the skateboarding now scrolls on account of the small screen. Best of the bunch is surfing and it's almost worth owning for this event alone. Almost.

CALIFORNIA NES

■ Developed by Rare, this is a faithful if no-frills adaptation that delivers solid versions of all six events. As you'd expect from a Rare title, the graphics are very good, but the gameplay feels a little ragged in places, as if the fine-tuning was skipped to meet a deadline.

CALIFORNIA MASTER SYSTEM

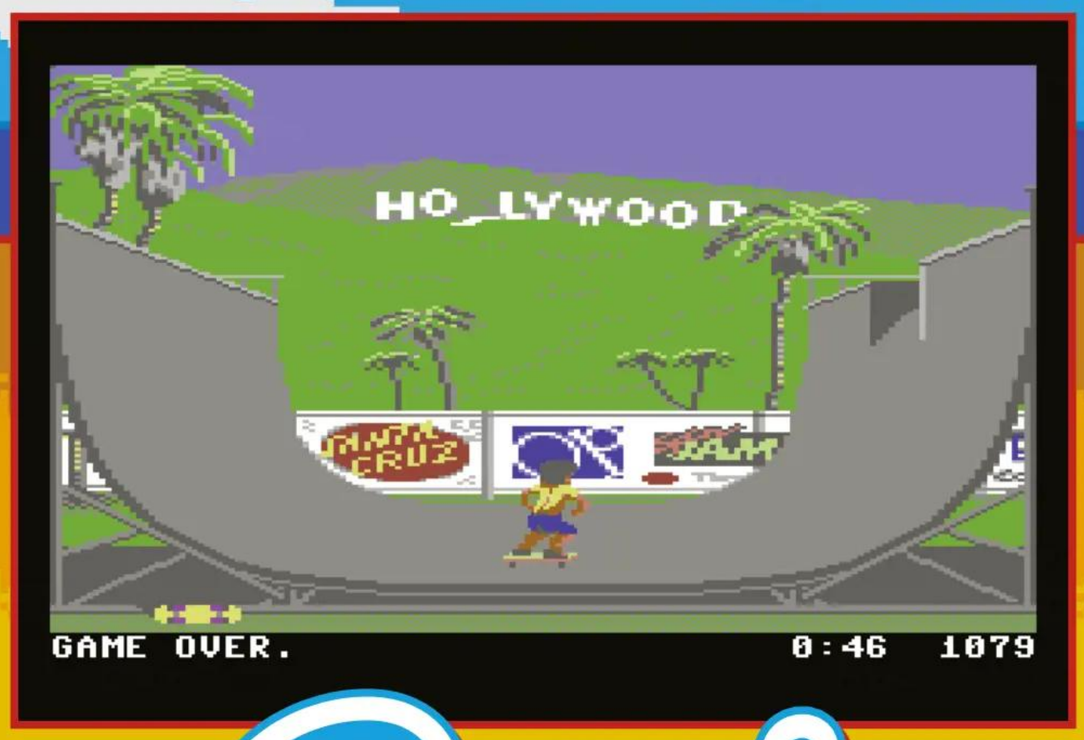
■ We're big fans of this conversion here at **RG**. All six events have been converted with clear respect for the originals, and the end result is one of the system's finest sports titles. It even included a few surprises for veterans of the existing computer versions.

CALIFORNIA MEGA DRIVE

■ Forget the sequel, *this* is how you update the original. The sports are all pleasingly familiar, but the presentation has been polished until it shines and there are various settings you can tweak. The only downside – flying disk is missing. What a shame!

DISK THROWER

DISK CATCHER



Developer Q&A

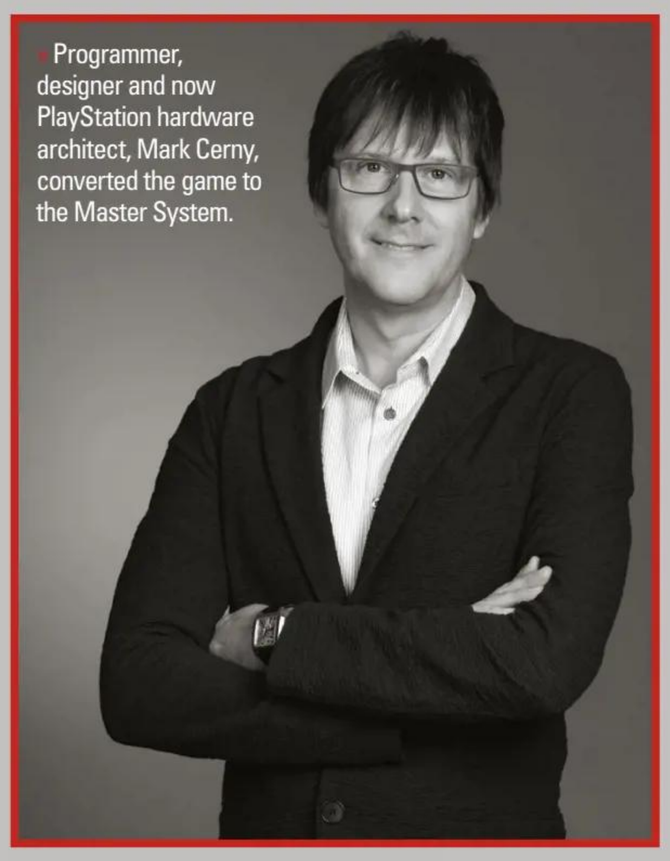
MARK CERNY REVEALS THE STORY BEHIND THE SUPERB MASTER SYSTEM VERSION

HOW DID YOU COME TO WORK ON THE MASTER SYSTEM VERSION OF *CALIFORNIA GAMES*?

■ At that time, Sega was searching for games to port to the Master System. I was working on a port of Shanghai – a game I'd asked them to licence as I love puzzle games – when they told me they'd gotten the rights to *California Games*, and asked if I would like to port that game next. It looked like a nice challenge so I said yes.

HAD YOU PLAYED THE GAME BEFORE WORKING ON IT?

■ I'd certainly heard of it, but didn't play until after Sega had picked up the licence. The prospect of porting six separate minigames was a bit daunting, but they all looked relatively simple. My guess was three months to do the job… which of course was wildly wrong. It ended up taking closer to six months.



Programmer, designer and now PlayStation hardware architect, Mark Cerny, converted the game to the Master System.

WHAT KIND OF REFERENCE MATERIALS DID YOU RECEIVE, IF ANY?

■ Our reference was the game itself, I believe on the Commodore 64. That meant that our little three-person team – planner, artist and myself as programmer – was essentially eyeballing the existing game in order to recreate it. At the time I couldn't speak Japanese and the planner spoke no English. He'd huddle with the artist and they'd create pieces of artwork such as limbs of a character or parts of a playfield. The planner would print them, cut them out, and use a glue stick to stick them in a big book. This would be followed by lots of pointing and pantomime. By the end of the project, we were in quite a groove despite our inability to use words to communicate.

WERE THERE ANY DIFFICULTIES IN IMPLEMENTING THE EVENTS ON THE MASTER SYSTEM?

■ The toughest event was definitely surfing due to the complexities of creating that wave, but the artist had a plan and it worked out quite nicely. The most fun to implement was BMX. I was able to implement fake multiplane scrolling. The Master System didn't support that in hardware but there were ways to get around that if your software approach was clever enough.

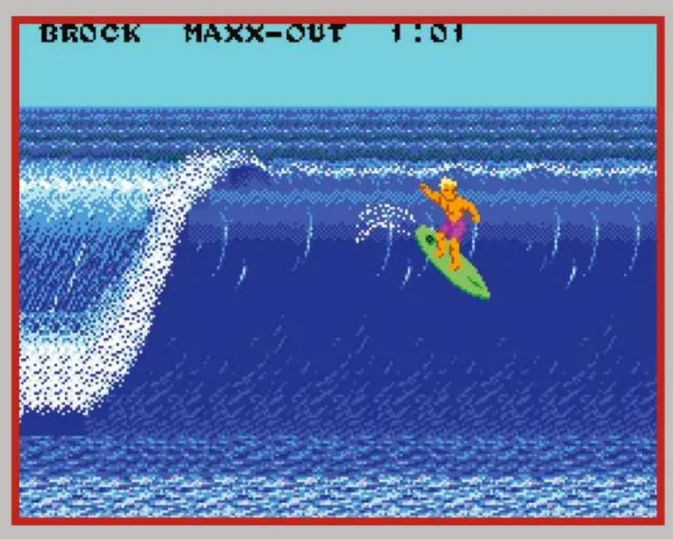
"THE TOUGHEST EVENT WAS DEFINITELY SURFING DUE TO THE COMPLEXITIES OF CREATING THAT WAVE..."

DO YOU HAVE A PARTICULAR FAVOURITE EVENT AMONG THE SIX INCLUDED?

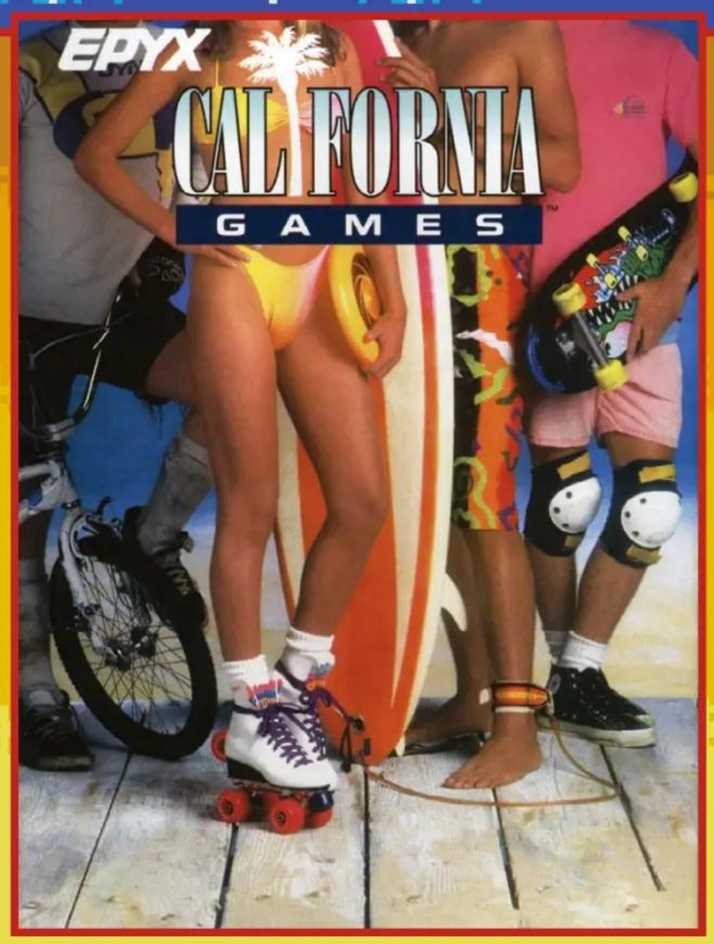
■ Definitely the roller-skating. I recall stumbling a bit as a player until I got into a groove, and in the end it was very satisfying to play.

YOUR VERSION RECEIVED POSITIVE PRESS REVIEWS, AND IS GENERALLY THOUGHT OF AS BEING ONE OF THE BETTER VERSIONS OF THE GAME. WHY DO YOU THINK IT IS SO WELL REGARDED?

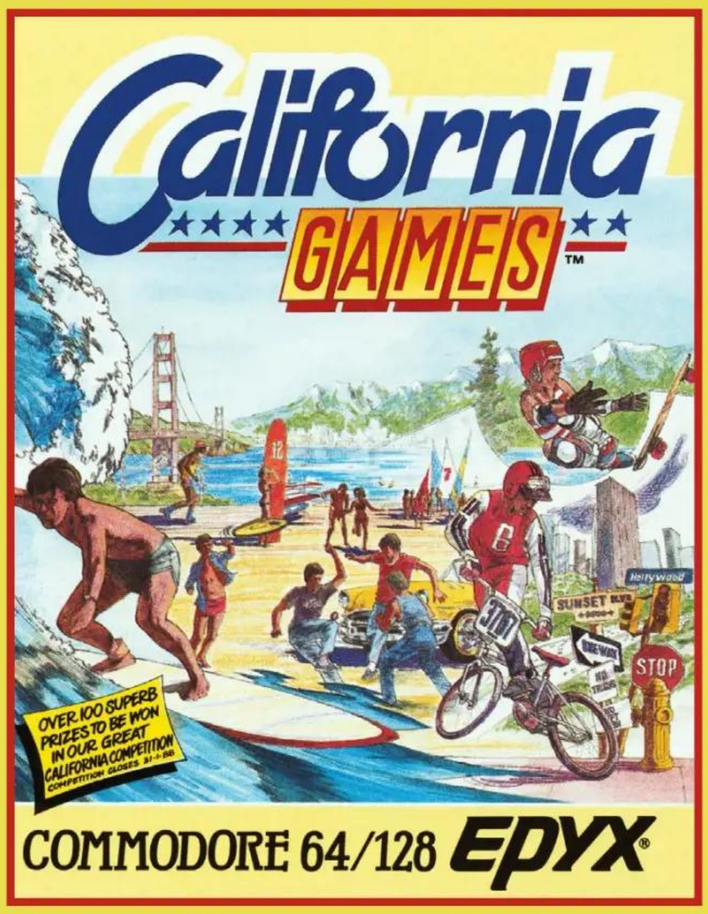
■ By that point in development for the system, we had a *lot* to draw on. In my case, that was a bag of tricks from my previous three Master System titles, plus the ability to learn techniques from the other programmers in the bullpen. In true Japanese style, all of our desks were lined up in one area facing the boss. So if you needed help or wanted to brainstorm, there was someone literally three feet away.



» [C64] Just when you thought it was safe to go back in the water…



» The original US artwork, showing the competitors getting ready to 'shred', we believe the term is.



» Here's the alternative artwork used on the versions of the game published by US Gold.

» [Atari ST] The judges award their scores in the surfing event. We need to try harder. [Much harder – Ed]

preview and review. Epyx was renowned for its high levels of presentation and polish, and with *California Games* it really topped out. The simply depicted athletes from the earlier games were replaced by proper characters, giving them more personality. The California locales also added to the appeal – like playing foot bag in front of San Francisco Bay, with the Golden Gate Bridge and Alcatraz Island in the background. Similarly, flying disk took place in the Yosemite Valley, while the skateboarding half-pipe was located in Los Angeles, under the Hollywood sign.

That famous landmark featured in one of several 'hidden' scenes that build on the humour that emerged in *World Games*. After finishing the half-pipe, sometimes a small earthquake would shake the screen and cause one of the letters in the sign to topple over. In surfing, wiping out occasionally led to a cameo appearance from a mocking seabird, dancing dolphin or menacing shark (complete with the 'da-dum, da-dum' *Jaws* theme). Finally, in flying disk, if you paused for too long before throwing, an alien ship would swoop down and abduct the catcher, in a nod to Williams' *Defender*.

"EPYX WAS RENOWNED FOR ITS HIGH LEVELS OF PRESENTATION AND WITH CALIFORNIA GAMES IT REALLY TOPPED OUT"

All of this content was produced by a 20-strong team of programmers, artists and musicians that developed the game over a nine-month period. The lead format was the Commodore 64, but the team also worked on the Apple II and PC versions at the same time. The game was released in 1987, during the height of summer, fittingly, and immediately garnered great reviews. *Zzap!64* gave it 97% and a Gold Medal, with editor Ciaran Brennan calling it the best of the series to date. "*California Games* is a real progression in the Epyx sports sim range," he commented. "Epyx have somehow managed to surpass their own high standards – the pictures and sounds generated by this program are atmospheric beyond belief." Fellow reviewer Jaz Rignall also gave it the thumbs up. "*California Games* is quite simply the apex of computer sports gaming at the present

» [Atari Lynx] The wave might be rolling the wrong way, but the surfing game on the Lynx is excellent.

▶ time." Eric Doyle of *Your Commodore* also deemed it Epyx's best. "If I had to lose all but one of my Epyx *Games* disks, I would choose to keep this one," he wrote in a glowing review, where he actually awarded the graphics 11/10. And on the C64 at the time, the graphics really did go one better – up to 11.

"WORLDWIDE SALES REPORTEDLY TOPPED 1.5 MILLION COPIES, MAKING IT THE BEST SELLING GAME IN THE SERIES"

***The Games Machine* was a little cooler, awarding the C64 version 92%, commenting, "Though undoubtedly the most polished of the *Games* series, *California Games* isn't quite as absorbing as its predecessor *World Games*."** One issue all of the mags agreed on was the cassette version. The game was obviously a multi-load, designed for systems with disk drives, yet European publisher US Gold had to convert it to cassette for the UK and other markets. This result was generally fine (albeit long-winded) if you played through the events in order, but not so good if you wanted to practice certain sports. "The multi-load cassette may cause a few headaches," warned *Zzap!64*, but it was felt that the overall game was so good that it was an inconvenience worth suffering.

Any worries that players might be experiencing *Games* tedium after four previous entries were dispelled when *California Games* shifted 500,000 copies by the end of 1988. Conversions naturally followed and the game appeared on a further 11 formats – with each team no doubt wondering how they were supposed to recreate THE WAVE. The most interesting conversions were those for the Sega consoles. The Master System version, programmed by Mark Cerny (see Developer Q&A panel) and released in 1989, replicated the original in fine fashion and even added a tile-flipping minigame where you could unlock new skills and equipment. Meanwhile, the 1991 Mega Drive version, developed by Novotrade, took things further by giving the graphics and animation a proper 16-bit boost and adding new elements to the familiar events (half-pipe and foot bag now allowed two people to play at once, and in roller-skating you shared the boardwalk with other skaters).

Thanks to the numerous conversions, total worldwide sales reportedly topped 1.5 million copies, making it the best-selling game in the series by some margin. Epyx continued to pump out sims – *The Games: Winter Edition* and *The Games: Summer Edition* followed, along with the lacklustre *California Games II* – but the firm struggled to recapture its past glories. Epyx ceased operations in 1993, but in 2006 it was announced that UK publisher System 3 had acquired Epyx's assets and a new version of *California Games* was heading to the Sony PSP, Nintendo DS and Wii. Nothing materialised, but the C64 version did pop up on the Wii Virtual Console in 2008. More recently the C64 game was bundled with The C64 device, and both the C64 and Atari Lynx versions have appeared on Evercade carts, proving that the sun hasn't yet set on *California Games* and its rad sports. ✱

Rad Sports

THE SIX EVENTS THAT MAKE UP CALIFORNIA GAMES

■ In the shadow of the Hollywood sign, you have 75 seconds to perform as many tricks and turns as possible. Timing is everything here – turn too soon or too late, or hold too long, and you're losing some skin. This requires more practice than any other event.

OUR RATING:..... GNARLY

■ With such picturesque surroundings, it's fitting that this is the most relaxed event of the six. Kick the bag into the air and try to keep it off the ground, while freestyling some tricks for bonus points. Don't forget to hit that pesky gull while you're hopping about.

Our rating: ..... BOGUS

■ Let's be honest, this is why we're all here, to ride those epic waves while trying to look cool and impress the judges (it's possible to be awarded a perfect 10.0 score if you take risks, like riding under the curl of the wave). Watch out for sharks when you wipe out.

OUR RATING:..... TUBULAR

■ Bomb along the boardwalk, avoiding dropped ice creams, discarded bikinis!, errant beach balls and other obstacles. Utilising a clever control method where you push up and down rhythmically to build up speed, this is another event that demands practice.

OUR RATING:..... BURLEY

» [C64] In flying disk, the most points are awarded by catching the Frisbee when it's directly over your head.

» [Mega Drive] The neat two-player feature allows one competitor to practice while the other earns a score.

CALIFORNIA
BMX RACING

■ This event is not so much about performing tricks (although you can pull off a few jumps and flips), but rather reaching the end of the bumpy dirt course as quickly as possible. Along the way you need to tap right to maintain speed while dodging hazards.

OUR RATING:..... BUFF

CALIFORNIA
FLYING DISK

■ It's basically unbranded Frisbee. By selecting the perfect angle and speed by hitting the green sweet spots, you'll hurl the disk across the valley – at which point, you take control of the catcher who must pluck it out of the air. It's more fun than it sounds.

OUR RATING:..... PSYCHE

More Fun In The Sun

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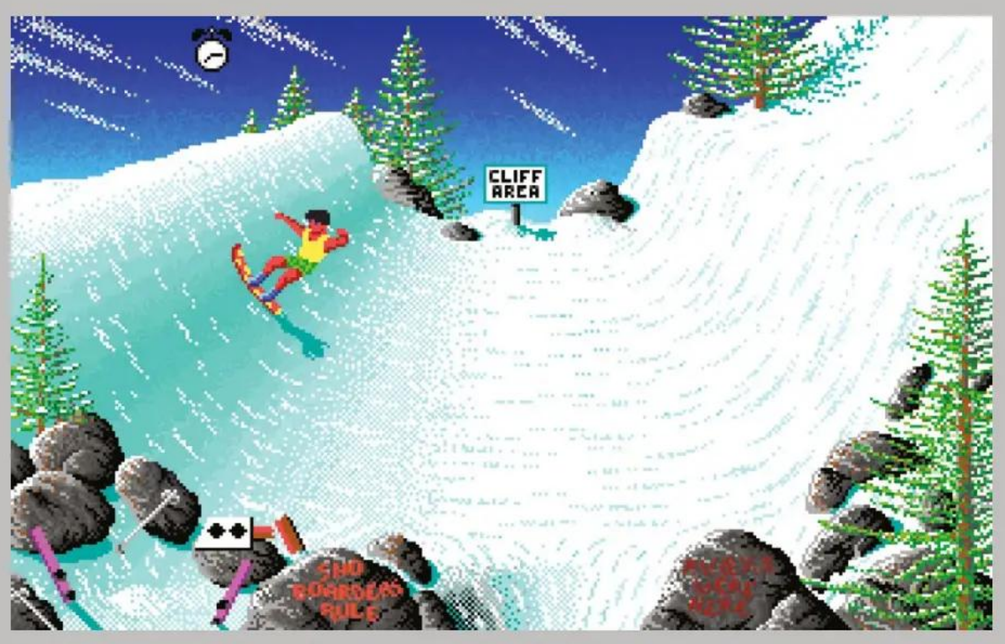
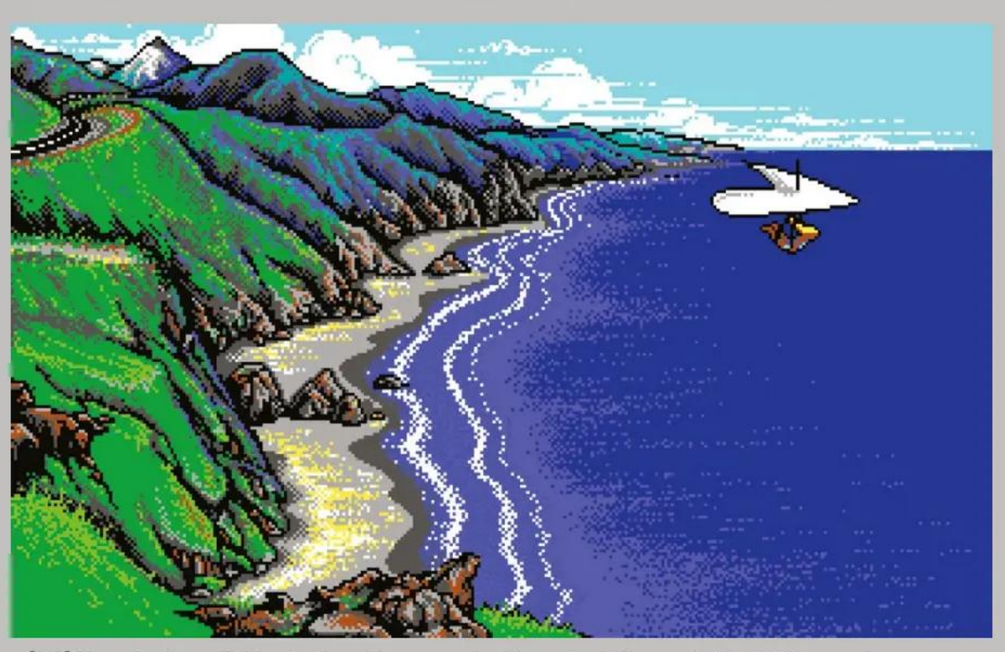
GAMES II
Copyright 1990 Epyx, Inc.

■ Stellar sales of the original game resulted in *California Games II* which debuted on the PC in 1990, with conversions to the Amiga, Atari ST, Super Nintendo and Master System following in 1992/93. Second time around there were five sports represented – skateboarding, snowboarding, bodyboarding, hang-gliding and jet skiing (this last one was skipped on the Master System). Although there were fewer sports than before, there was actually more content as most of the events had multiple sections. For example, snowboarding was made up of four parts: first, fly your helicopter to the top of the mountain, then snowboard down the mountainside until you reach the half-pipe section, where you can pull off some tricks, and finally continue down to the finish line at the foot of the mountain.

Despite these additions and the expected improvements to the presentation, the sequel received average-to-low review scores across all formats. The reaction suggested that the multi-sports format had run its course, yet it surely didn't help that Epyx was fighting bankruptcy throughout its development, with the original game's creator Matt Householder roped in to salvage something from the various work-in-progress builds that could be released.



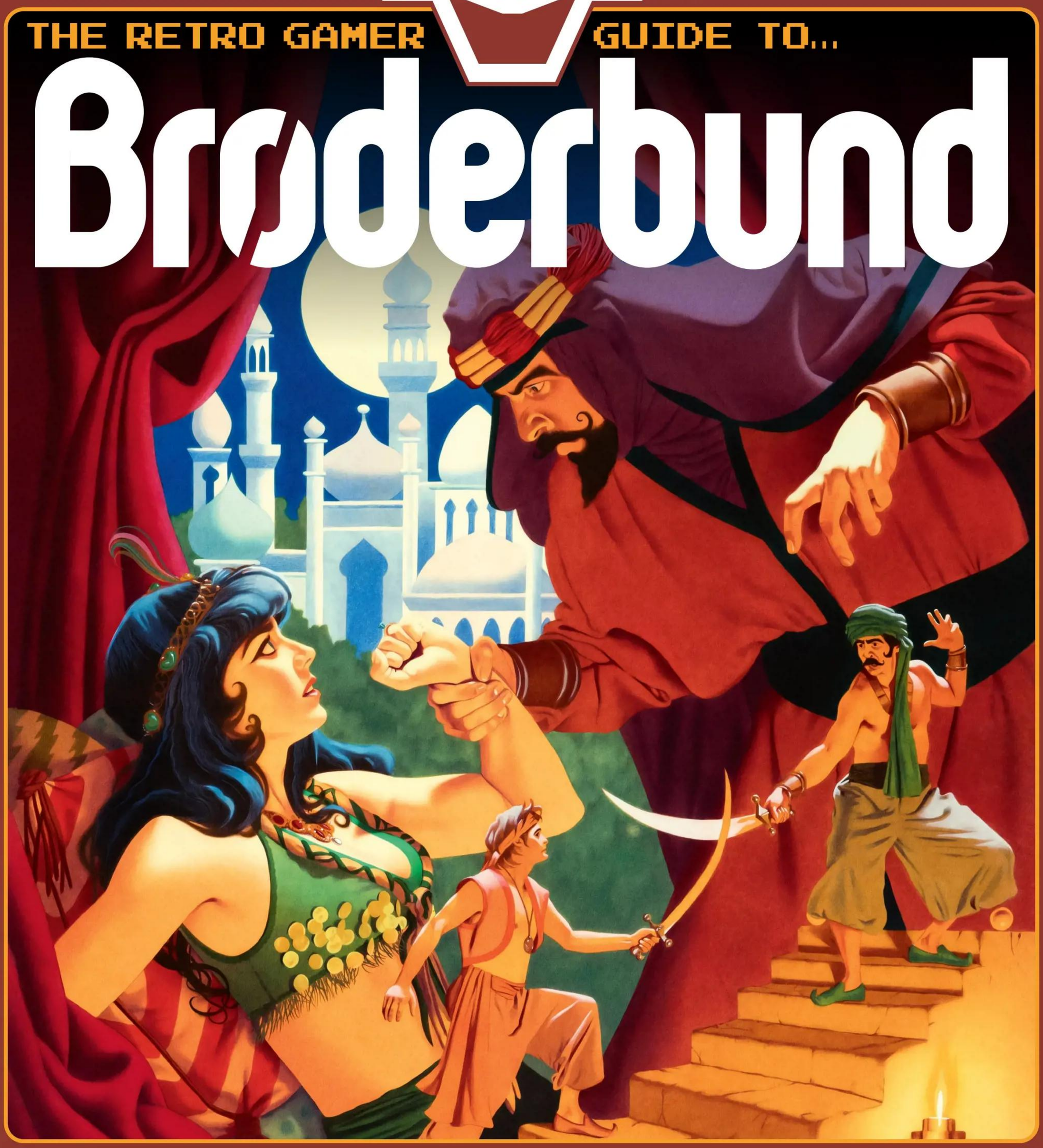
» [PC] Yes, it does snow in California, which opened the door to the snowboarding event.



» [PC] Hang in there. Taking to the skies, armed with water balloons, in the 1990 sequel.

THE RETRO GAMER GUIDE TO...

Brøderbund



Restoration work of *Prince Of Persia* art by Jan Hofmeister

FOUNDED IN 1980, BRØDERBUND HELPED DEFINE COMPUTER GAMING WITH GROUNDBREAKING TITLES SUCH AS CHOPLIFTER, LODE RUNNER AND PRINCE OF PERSIA. **RETRO GAMER** LOOKS BACK AT THE CELEBRATED PUBLISHER'S GREATEST HITS

WORDS BY RORY MILNE

A year after creating the real-time strategy game *Galactic Empire*, Doug Carlston started Brøderbund with his brother Gary in order to market his debut title. Further success was found with the 1981 *Space Panic* tribute *Apple Panic* and the 1982 helicopter rescue title *Choplifter*. Doug Smith's multi-system platformer/puzzler *Lode Runner* followed in 1983, as did the popular platform games *Spelunker* and *Drol*.

In 1984, the publisher diversified its output with the top-down shooter *Raid On Bungeling Bay* and Jordan Mechner's stylish brawler *Karateka*. Then in 1985 it released the first of a hugely popular series in the form of the edutainment title *Where In The World Is Carmen Sandiego?*

Innovative games continued to be Brøderbund's focus throughout the late-Eighties, with highlights being the ambitious third-person shooter *Airheart*, the construction simulator *SimCity* and Jordan Mechner's puzzle-based platformer *Prince Of Persia*.

During the Nineties, Brøderbund impressed with the polygon-powered daredevil driving game *Stunts*, the *Prince Of Persia* sequel *The Shadow And The Flame* and the beautifully crafted adventure *Myst*. It then rounded off the decade with the immersive point-and-click title *The Last Express*.

In 1998, Brøderbund was sold, and by 2001 the firm's IP was owned by Ubisoft, which released *Myst* and *Prince Of Persia* titles until 2013. However, other firms continued Brøderbund series like *Choplifter* and *Lode Runner*.

In terms of legacy, Brøderbund's back catalogue ensures that it's a byword for quality, as proven by the continued appeal of the ongoing franchises that began with its releases.

APPLE PANIC 1981

APPLE II, VARIOUS

In a rare case of an unofficial adaptation of an arcade game outselling its inspiration, *Apple Panic* did far better outside of Japan than its inspiration *Space Panic*. To give credit where credit is due, *Space Panic* did lead to the creation of one of gaming's most popular genres – the platformer. But it doesn't require the player character to jump, so it can't really be described as the first platform game. However, it did influence the design of later games like *Donkey Kong* that have a more convincing claim to that title.

In respect of Brøderbund's homage, *Apple Panic* replicates its arcade counterpart's mechanics to a tee. The aim is to dig holes in platforms connected by ladders and then trick your foes into falling into them. Once trapped, you bash them into oblivion with your spade, and each time you clear a level of foes you meet more of them, including hardier variants. For these tougher opponents you need to dig two or three holes, each one exactly underneath the others. If they aren't properly aligned then your enemy's fall is stopped short by the surface area underneath, with a result that they're able to walk away unharmed.

Where *Apple Panic* differs from Universal's arcade game is in the way that its antagonists react to the player character, and this makes quite a difference to its gameplay. In *Space Panic*, your enemies gravitate towards you, albeit taking circuitous routes to do so. Whereas in *Apple Panic* you have to actively tempt foes towards the holes you've dug by getting as close as possible to them while avoiding their deadly touch. If you keep your distance they ignore you, spending their time on platforms and ladders far from your position. These considerations introduce strategy into the Brøderbund release that was never there in its arcade inspiration, which may go some way to explaining why *Apple Panic* was a hit in the US despite being based on a coin-op that went almost unnoticed in American arcades.

CHOPLIFTER 1982

APPLE II, VARIOUS

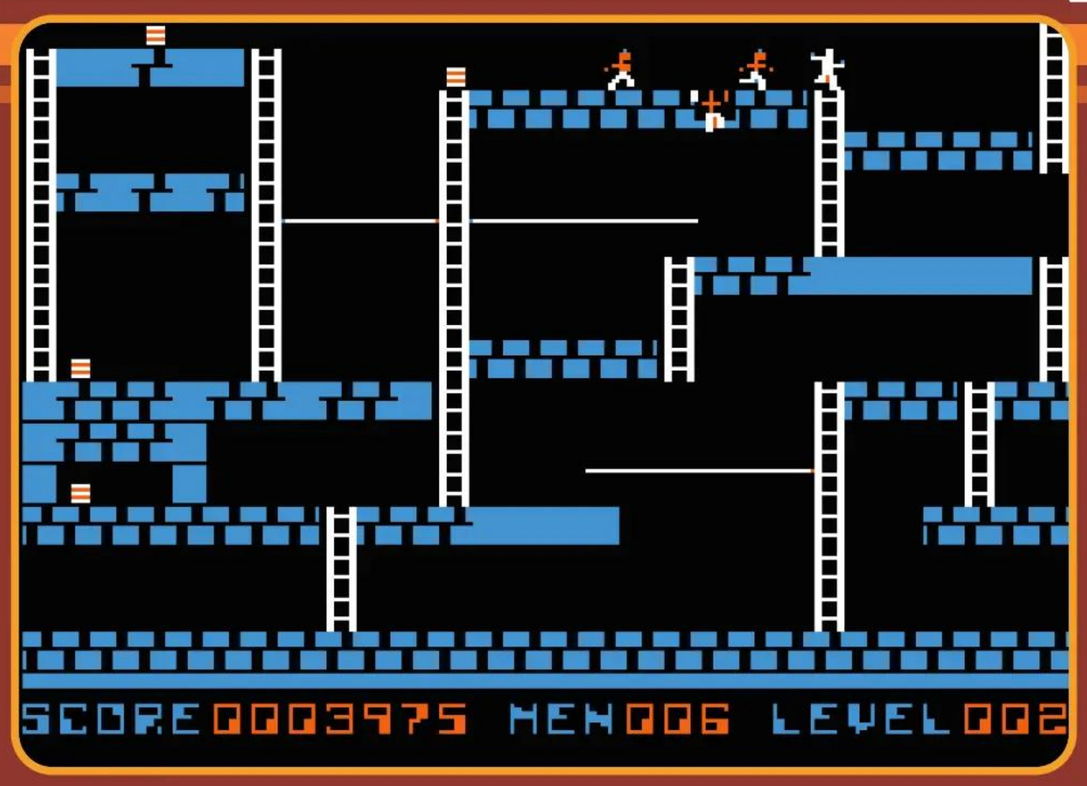
You only have to look at how many systems Dan Gorlin's *Choplifter* was adapted for to realise the scale of its success. The side-on helicopter shooter was first developed for the Apple II, but it ended up on more than a dozen other systems. It's probably unfair to call *Choplifter* a shooter, as there are only occasional situations where you need to shoot things down. More specifically, there are enemy jets that patrol the skies, and you have to blast them out of the air before they do the same to you. Jets aside, you're far more likely to bomb targets in the form of tanks. This greater focus on fighting ground forces has a knock-on effect on your second goal in *Choplifter*, which is the rescue of hostages that are being held captive in enemy territory. You find them streaming out of wooden huts, and you have to land your chopper to allow them to climb aboard. Naturally, this turns the tables in your battles with enemy tanks, since it makes your helicopter a sitting duck while you wait for the hostages to get inside. This leads to a game of cat and mouse, where you rescue as many hostages as possible before a tank appears and forces you back into the air. You also have to consider your chopper's maximum hostage limit, because once that's reached you have to head back to base to drop off those you've rescued before you can go back out to rescue any that you left behind.

SPELUNKER 1983

ATARI 8-BIT, VARIOUS

One of only a few Eighties computer games to be adapted for the arcades, *Spelunker* was originally designed for the Atari 8-bit computers before being adapted to other platforms. Aside from doing well in the States, Tim Martin's ambitious platformer went down a storm in Japan thanks to Irem's Arcade, Famicom and MSX adaptations. Brøderbund, for its part, distributed the popular Atari original, which in many respects defies the expectations of a platformer of that time.

Most obviously, *Spelunker* scrolls rather than being flick-screen, unlike so many of its contemporaries. Another twist is that it gives the player the objective of heading downwards for treasure rather than upwards to the surface. The way you deal with opponents is also atypical in that *Spelunker*'s hero is unarmed, and so has to deter enemies in other ways. There are bats that attempt to drop deadly guano on his head, and dissuading them requires you to locate a flare that can be fired in their direction. There are also ghosts that haunt the game's epically deep caves, and you have to waft air at them in order to disintegrate them, although this comes at the cost of depleting your air supply. Happily, oxygen is one of the game's many collectables, and can be found lying about its cavern floors. Other pickups include dynamite, which proves essential for blowing your way through passageways that have been blocked by falling rubble. Then there are keys. It's crucial that you find these, as they unlock new areas of the game, so if you miss them then that can give you a lot of backtracking to do. *Spelunker* also has its fair share of environmental hazards, such as lethal geysers to be leapt over, and conveyors, ladders and ropes that throw you off if you don't interact with them in exactly the right way.



LODE RUNNER 1983

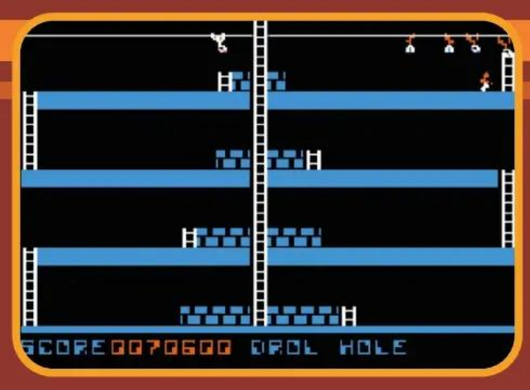
VARIOUS

On paper, *Lode Runner* sounds like a lot of other games of the time. You run along platforms and climb ladders, all the while collecting gold bars and fleeing from opponents. So far, so similar, but in *Lode Runner* you do everything at speed while your foes relentlessly home in on your position. You can dig holes for them to fall into, like in *Apple Panic*, but because they greatly outnumber you this does little to even the odds. It does, however, cause them to drop any gold they've collected, which is just as well since you need to get every bar on each level to escape to the next.

DROL 1983

APPLE II, VARIOUS

Another Brøderbund release that has platforms but no jumping, although in *Drol* the robotic player character you control can hover as well as walk around. The idea of the game is that you have to rescue people and their pets from side-scrolling levels consisting of stacked platforms. Each of these is infested with nasty creatures, but you can avoid these by switching platforms, which is done by dropping down or flying up through hatches in the floors and ceilings. You can also blast your opponents to pieces with rainbow-hued lasers, although since they tend to creep up on you in numbers, and because there's very little space on each platform for everyone, you need split-second reaction times to make good progress through the levels. To make things even more difficult, the people and animals you have to rescue never stand still, which gives you the additional task of tracking them down before you can get them out of harm's way.



CHAMPIONSHIP LODE RUNNER 1984

VARIOUS

The mechanics *Championship Lode Runner* is based on are the same as those in the original, but thinking that makes the follow-up no different from its predecessor would be missing the point of the sequel. As its name suggests, *Championship Lode Runner* offers a far greater challenge in comparison to the first game. It does this through its level designs, which can test the player in different ways. They may require forward planning and a considered strategy to complete, or they could require exact timing while running from one place to another with enemies breathing down your neck. Its stages are also as varied as they are tough, due to them being designed by ten different designers, each given the goal of making them expert-level challenges. As well as Brøderbund's Doug, Don and Alice Carlston, several computer-magazine staff contributed levels to the game. What's interesting is how you don't know what to expect from stage to stage in the way that you do when you play Doug Smith's original. Very often in *Championship Lode Runner* you're working out a strategy seconds before having to implement it, as there are no safe spaces to collect your thoughts.

RAID ON BUNGELING BAY 1984

C64, VARIOUS

There's a lot going on in Brøderbund's top-down helicopter title. Although it's fundamentally a shoot-'em-up, Will Wright's *Raid On Bungeling Bay*'s sprawling, scrolling world gives you a fair bit of exploration to do between firefights. Its remote islands have to be visited in turn, with a view to restricting your opponents' evolving military capabilities by dropping bombs on arms factories. If you spend too much time on any one island, however, then the factories on the other islands start churning out jets, missiles and battleships by the dozen. Worse still, small boats travel between the islands, taking surplus supplies from one to another. Lastly, there's an aircraft carrier where you get your helicopter repaired and replenish its supply of bombs. If you spend too long away from it your enemies start attacking it, and if you don't defend it then it gets blown out of the water. All of which places a greater emphasis on strategising than exercising your trigger finger.

KARATEKA 1984

APPLE II, VARIOUS

Although *Karateka* is a side-scrolling beat-'em-up, that description doesn't really do it justice. The most obvious aspect of the game that differentiates it from contemporary brawlers is the ongoing narrative of its hero's quest to rescue a princess from a warlord's fortress. There's nothing special about the premise, but the sense of immersion achieved through the telling is impressive. *Karateka*'s cutscenes play out between battles like a silent movie, with dramatic posturing and music drawing the player into its story. The game's combat is equally sophisticated, both aesthetically and mechanically. Its sprites are the product of rotoscoping – a process where frames of film are pixelated, which results in smooth, convincing character movement. Mechanically, the game's battles require you to gain ground between bouts by running towards the level exit as your opponent charges towards you in order to keep you as far from it as possible. When you meet, you fight, but even then your rival tries to drive you back and away from your goal. Further depth is created by eagles attacking you and portcullises dropping as you pass under them.

RIO DE JANEIRO
Sunday, 10 a.m.
Rome
Athens
New Delhi
Ambassador:
A reliable source told me he said he was taking a message to the President. He had red hair.

CAIRO
Tuesday, 3 p.m.
Hotel manager:
All I know is that he said he had always wanted to see the Sahara. He ordered seafood.
See connections
Depart by plane
Investigate
Visit Interpol

WHERE IN THE WORLD IS CARMEN SANDIEGO? 1985

VARIOUS

Educational games of the Eighties often failed on both fronts; their entertainment value was doubtful given their lack of original or compelling gameplay, and their educational content was slight and felt like it had been awkwardly added as an afterthought. By comparison, *Where In The World Is Carmen Sandiego?* is both highly playable and innovative, and educates without the player even being aware of being taught. Brøderbund took years to develop the game, and it shows. Where it shines is in its implementation of the challenge it sets. You have to track down a gang of thieves led by the titular Carmen Sandiego, starting with her crew and then ultimately their boss. This requires investigation on a global scale against the clock – if you take too long you lose the trail of the crook that you're after. You question the locals in each country you visit, and based on their responses you have to guess which country your suspect has fled to. This requires geographical knowledge found in an almanac that comes with the game, with the research done and facts found providing the title's learning element.

AIRHEART 1986

APPLE II

The fact *Airheart* runs on a 128KB Apple II is nothing short of amazing. Dan Gorlin's third-person-perspective shooter uses high-res multicoloured scaled sprites that whiz around at top speed, giving you an impressive sensation of motion. The action takes place out at sea, where you guide a jet-propelled device into enemy territories. Your robotic opponents are found in groups near buoys, and once shot they leave behind a pod that you have to collect before it regenerates itself back into a droid. Once you clear an area you claim a magical item and move onto the next, where you meet increasingly dangerous foes with better offensive capabilities.

WINGS OF FURY 1987

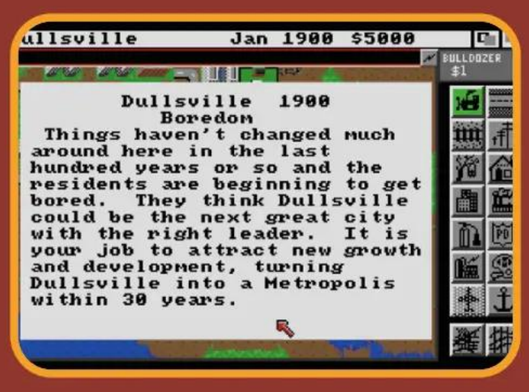
APPLE II, VARIOUS

Wings Of Fury puts you in charge of an American fighter plane in combat with the Japanese air force during World War II. Each flight begins on a battleship floating on the Pacific, where you choose the secondary weapon that best suits your chosen mission. You might need to take out fixed guns with a bombing run over a jungle, or there might be enemy battleships in the area that can only be destroyed with torpedoes launched from close range. Later levels involve both of these challenges and more, and so require you to return to base for repairs, refuelling and to switch weapons between sorties.

TYPHOON THOMPSON IN SEARCH FOR THE SEA CHILD 1988

ATARI ST, AMIGA

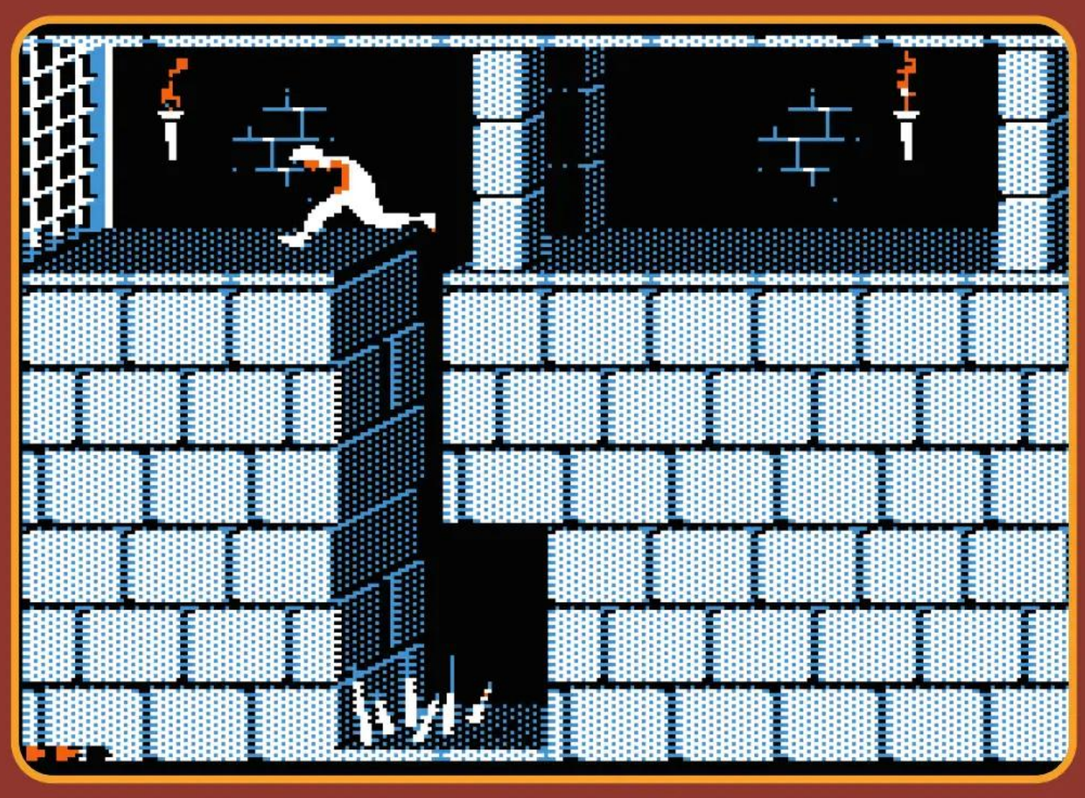
Although it's closer to what Dan Gorlin wanted to achieve with *Airheart* but couldn't due to technical limitations, the 16-bit *Typhoon Thompson* nevertheless improves on its predecessor's aesthetics and enhances its gameplay. There are no underwater challenges or islands linked by tunnels as he originally envisaged, but he implemented several new mechanics. Most noticeably, *Typhoon Thompson* introduces a gradually changing day/night cycle that helps the player keep note of the time taken to clear levels. This affects your score, so it's a helpful visual aid to have. There are also four distinct weapons that you earn as you make progress, whereas in the original you just got a laser cannon. Lastly, there are amusing pre-game animations showing a reluctant Typhoon Thompson being persuaded to accept the game's challenge.


ullsville Jan 1900 $5000
Dullsville 1900
Boredom
Things haven't changed much around here in the last hundred years or so and the residents are beginning to get bored. They think Dullsville could be the next great city with the right leader. It is your job to attract new growth and development, turning Dullsville into a Metropolis within 30 years.

SIMCITY 1989

VARIOUS

At its core, the challenge set by *SimCity* is to design and build a successful city. This is done by dragging and dropping icons representing houses, power plants, public services and so on onto an overhead city map. All of the complications and potential pitfalls involved with developing a city in real life are incorporated into the game, and there are also fantasy situations to contend with, such as attacks by Godzilla. You also have the option of playing time-limited, goal-orientated scenarios, some of which are based on historical events like the San Francisco earthquake of 1906.



PRINCE OF PERSIA 1989

APPLE II, VARIOUS

There's a clever mix of genres in Jordan Mechner's *Prince Of Persia*. It's part platformer, part puzzler and part slash-'em-up, and each of these genres are introduced gradually and then layered to create hybrid challenges. *Prince Of Persia*'s medieaval Middle Eastern dungeon and tower levels are filled with traps, hazards and guards that the player has to overcome. Traps can sometimes be bypassed with platforming skill – for instance, there are gaps over steep falls and spikes that have to be leapt over from just the right distance away. But other times traps can involve a puzzle of some sort. For example, a portcullis might temporarily raise when you stand on a remote pressure point, giving you a chance to run under it before it falls on your head. Hazards can include climbing up or down to other levels without falling off, rocks that come tumbling down on top of you and passageway-blocking guillotines that snap open and shut in quick succession. The guards in *Prince Of Persia* are armed with swords, but they don't appear very often at the start of the game. This is just as well, since you don't have a sword of your own until you find one towards the end of the first level. Once you have it you can engage the guards in sword fights. As with falling foul of traps and hazards, taking damage from the guards costs you lives, although drinking red potions found lying around the stages restores these.

STUNTS 1990

PC, VARIOUS

Clearly influenced by the Atari coin-op *Hard Drivin'*, *Stunts* is a polygon-powered daredevil racing game with an emphasis on insane courses. As well as loop-the-loops and jumps over buildings, it invites the player to negotiate corkscrews and extreme banked corners. You get the option of racing the clock to beat your best time or against a choice of six different opponents. *Stunts* lets you drive 11 different models of cars – both manual and automatic. Unlike arcade racers, crashing your vehicle doesn't simply incur a time penalty. Instead it's race over, which adds a pinch of realism to proceedings. On that note, the type of surface you're driving on is reflected in the amount of grip your tyres have, going from good grip on tarmac then depreciating from there depending on if your car is on gravel, grass, snow or ice. *Stunts* also has a track editor, so when you get bored of the built-in courses you can design your own.

PRINCE OF PERSIA 2: THE SHADOW AND THE FLAME 1993

PC, VARIOUS

The original *Prince Of Persia* was developed around the limitations of the 8-bit Apple II, whereas its sequel was designed to take advantage of PCs and 16-bit home computers. This is most obviously seen in *Prince Of Persia 2*'s scope and presentation. Unlike the first game, the sequel has you travelling between numerous different environments, from rooftops and harbours to beaches and caves. The dungeon and palace from the first game make an appearance too. In terms of presentation, the visuals in *Prince Of Persia 2* are sumptuous, with rich colours and detailed backdrops. There are fresh puzzles to solve, but by and large the follow-up's gameplay consists of platforming challenges and sword fights like those in its popular predecessor.

MYST 1993

MAC, VARIOUS

A big part of *Myst*'s appeal lies in the intrigue created by its surreal locations and oblique puzzles. It's also a thing of beauty, with lovingly rendered visuals that pull you into its strange but appealing world. It's not immediately clear why you're doing things in *Myst*, other than it seems like that might help you later on. There are numerous power switches, for example, and since they're all turned off it follows that they might need to be turned on. There are notes giving scant instructions on how to use arcane machinery that's typically all but impossible to identify; it's all very much trial and error, but that enhances rather than diminishes the experience.

THE LAST EXPRESS 1997

PC, VARIOUS

The interactive story that plays out in *The Last Express* is depicted with rotoscoped frames of film, although these are only updated every so often, giving a very different effect from full-motion animation. This feels in keeping with *The Last Express* being set in the Victorian era, perhaps because it reflects the state of film technology at that time. The compelling gameplay underpinning *The Last Express*' unique look uses point-and-click mechanics that the player uses to solve a murder while avoiding being blamed for it. The game takes place on the Orient Express, and setting it on the famous train gives scope for meetings with all sorts of colourful characters.

EXCELLENT IMPORTS

THE PICK OF THE JAPANESE TITLES PUBLISHED BY BRØDERBUND

There are relatively few Brøderbund console titles, and of those most are NES releases. Some Brøderbund originals were adapted for Nintendo's system by Japanese developers, but more interesting are the Japanese titles that Brøderbund published in the West. The Lenar-Tamtex developed *Deadly Towers* gets described as an action RPG, but it's probably best to think of it as a flick-screen action title where you fire daggers at foes and occasionally buy weapons, shields and potions from shops. Before doing so you have to earn enough currency, which is done by defeating bosses. This tends not to pay very well, but handily enough, bosses respawn after you leave the room you find them in, so you can beat them repeatedly until you have the cash to afford better offensive and defensive capabilities. Compile's *The Guardian Legend* has more eclectic gameplay. It's partially a top-down shoot-'em-up where you fly a ship through bullet hell, but it also has on-foot arcade adventure stages where you unlock new sections with keys, find certain objects and buy others in shops. ✱

A RARE CELEBRATION

FROM ITS EARLY DAYS AS ULTIMATE TO AMBITIOUS HITS LIKE SEA OF THIEVES – RARE HAS ALWAYS MANAGED TO BLEND CUTTING-EDGE TECHNOLOGY WITH GREAT GAMEPLAY. JOIN US THEN AS WE LOOK BACK AT EVERY ERA OF RARE'S HISTORY AND SPEAK TO THE MANY CREATORS, BOTH PAST AND PRESENT, THAT ARE BEHIND ITS MANY MEMORABLE GAMES

WORDS BY PAUL DRURY, RORY MILNE, MARTYN CARROLL AND DARRAN JONES
ARTWORK BY WIL OVERTON

Although it could be argued that its legacy began in the arcades (see page 20), Rare's actual heritage officially started with Ultimate Play The Game. Set up by Tim and Chris Stamper in 1982 thanks to their arcade success, the vast majority of its games appeared on Sinclair's Spectrum, although many were adapted to other home computers. While it hit the ground running with titles such as *Jetpac*, *Pssst* and *Cookie*, it was the introduction of *Sabre Wulf*, its high £9.99 price point and a bigger box featuring Tim Stamper's lavish art that saw Ultimate's games begin to pull away from the pack.

The Stampers weren't standing still though and as the home-computer market began to dry up they invested in Nintendo's Famicom system, reverse-engineered it and earned a contract with Nintendo to make games for the console. Now known as Rare, the developer found huge success in this period and created a staggering number of games for the 8-bit console, as well as several notable Game Boy releases.

In the mid-Nineties Rare began to revisit the Stampers' arcade roots and also found success on the Super Nintendo, which led to Nintendo purchasing a large share in the company. Rare's Midas touch continued to the Nintendo 64 where it produced a number of games like the experimental *Blast Corps*, the platformers *Banjo-Kazooie* and *Conker's Bad Fur Day* and the groundbreaking FPS duo of *GoldenEye 007* and *Perfect Dark*.

It seemed like Rare could do no wrong, and Microsoft soon snapped the studio up in an astonishing acquisition that rocked the games industry. Rare remains at Microsoft to this day and while its games are now a lot more advanced, they continue to marry cutting-edge technology with great gameplay, just as those many great Ultimate games did back in the Eighties. It's a real treat then to speak to current Rare staff and a large number of ex-members and associates to give you the ultimate story about the iconic British developer.

THE INTERVIEWEES

CRAIG DUNCAN
Studio head, Rare
FAVOURITE RARE GAME
Battletoads

LOUISE O'CONNOR
Executive producer, *Everwild*, Rare
FAVOURITE RARE GAME
Viva Piñata, Conker's Bad Fur Day

JAMES 'JT' THOMAS
Associate tech director, *Sea Of Thieves*, Rare
FAVOURITE RARE GAME
Solar Jetman: The Hunt For The Golden Warpship

MIKE CHAPMAN
Creative director, *Sea Of Thieves*, Rare
FAVOURITE RARE GAME
Banjo-Kazooie

CHRISTINA MCGRATH
Head of community & communications, Rare
FAVOURITE RARE GAME
GoldenEye 007

PAUL MACHACEK
Test, localisation & CS manager, Rare
FAVOURITE RARE GAME
Knight Lore, It's Mr Pants

HUW WARD
Senior operations analyst, Rare
FAVOURITE RARE GAME
Marble Madness

DAVID DOAK
Designer/systems administrator, ex-Rare
FAVOURITE RARE GAME
Atic Atac

GRAEME NORGATE
Musician, ex-Rare
FAVOURITE RARE GAME
Jetpac

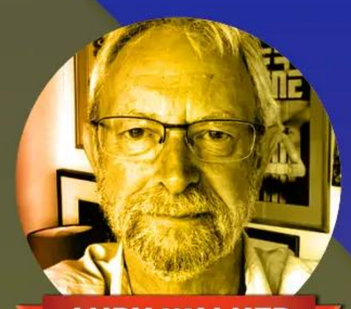
KARL HILTON
Lead artist, ex-Rare
FAVOURITE RARE GAME
Sabre Wulf

KEVIN BAYLISS
Graphics director, ex-Rare
FAVOURITE RARE GAME
Diddy Kong Racing

MARK STEVENSON
Lead artist, ex-Rare
FAVOURITE RARE GAME
Donkey Kong Country 2: Diddy's Kong Quest

CHRIS SUTHERLAND
Project manager, ex-Rare
FAVOURITE RARE GAME
Jetpac

DAVE THOMAS
6502 programmer, ex-Ultimate
FAVOURITE RARE GAME
Entombed



ANDY WALKER
Associate developer, ex-Rare
FAVOURITE RARE GAME
John Elway's Quarterback

LEN PARKS
Hardware engineer, ex-Zilec
FAVOURITE RARE GAME
Enigma II

A RARE CELEBRATION

THE ARCADE ERA

IF YOU THOUGHT CHRIS AND TIM STAMPER'S FIRST PUBLISHED GAME WAS FOR THE SPECTRUM, TIME TO THINK AGAIN. JOIN US AS WE INVESTIGATE THE BROTHERS' ARCADE ROOTS

» Paul Drury owns a *Blue Print* flyer like this and getting it signed by the Stampers and John Lathbury is on his bucket list.

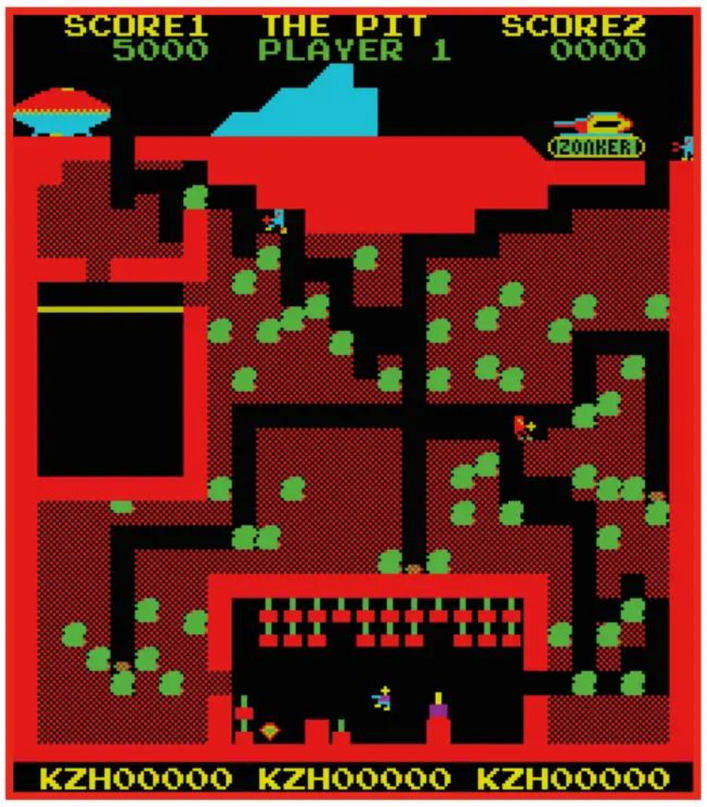
When *Jetpac* landed on the Spectrum in 1983, it wasn't just that it was a great game. The slick presentation, the tight, bug-free gameplay, the easy to learn, difficult to master premise… it felt like it could have been an arcade game, the ultimate accolade back then. The truth is, it could have been. By the time it was released, Chris and Tim Stamper had been developing coin-op titles for Burton-based company Zilec Electronics for almost three years.

To piece together this seldom told part of the Rare story, we have three valuable sources. Stuart Campbell, the ex-games journalist formerly of *Amiga Power* and this parish, did some excellent digging in a 2019 blog post and came up with a list of a dozen arcade games which could potentially be the work of the Stampers, which conveniently matched the number mentioned in a feature on Ultimate Play The Game in issue 22 of *Commodore User*. One of Stuart's tech-savvy readers then delved into the code of the list of suspects and discovered copyright text confirming Chris and Tim Stamper, together with John Lathbury, cofounder of Ultimate, as creators of six arcade titles – *Vortex*, *Enigma II* (also known as *Phantoms II*), *Blue Print*, *Grasspin*, *Saturn* and *Dingo*.

ANDY WALKER

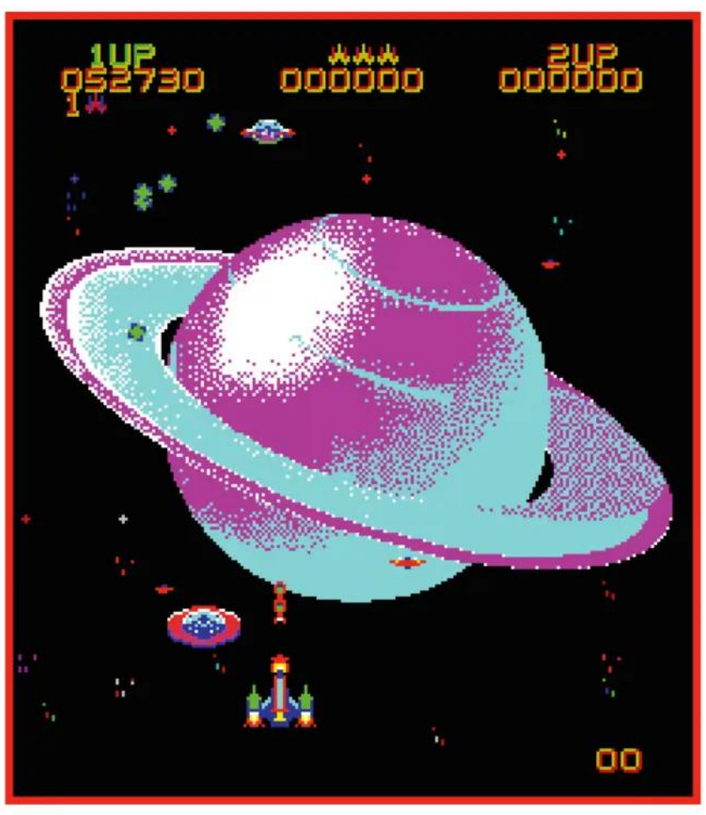
Then we have two eyewitness accounts. Andy Walker, who would later find success on the C64 through his Taskset label, first encountered Zilec at a trade show in London in early 1982. His little Bridlington-based company, AW Electronics, had developed an innovative 'videogame jukebox' concept, which allowed operators to easily switch between multiple games housed within a single cabinet. To showcase the technology, his company had developed a trio of arcade titles – *Andromeda*, *Hunter* and *The Pit* – using Tangerine hardware, which caught the eye of Zilec's managing director, Norman Parker, a visitor to the show. "His opening question was, 'How many sprites have you got?'" says Andy, with a wry smile. "I replied, 'None, it's bitmapped.' It became clear that Norman knew something about commercial videogame hardware that I didn't."

Norman invited Andy back to his place to look at his hardware. At the Zilec offices in Wetmore Road, Burton On Trent, Andy was immediately impressed with its technical expertise, its in-house development system and the fact that it



» [Arcade] Chris' conversion of *The Pit* for the UK market required some colour changes, due to the limitations of the *Galaxian* board it was coded for. If you remember the game as being predominantly red, you're playing his work.

» [Arcade] *Dingo* came out in 1983, the same year as *Jetpac* and *Cookie*, and you could definitely imagine it as a Spectrum game. In fact it got a Spectrum homebrew release in 2011.



» [Arcade] Andy Walker recalls seeing an early version of *Saturn* during his initial visit to the Zilec offices, when it was simply called *GWNN*, short for *Game With No Name*.

» [Arcade] Part memory-test, part Heath Robinson-inspired shooter, *Blue Print* is the best of the Stampers' arcade work

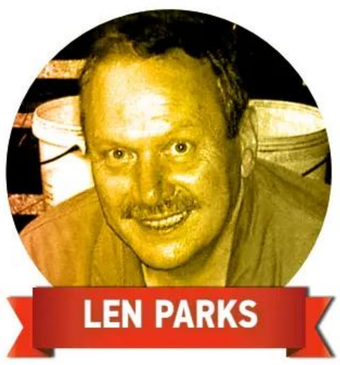
» [Arcade] *Grasspin* is the oddest of the Stampers' trio of maze-based coin ops, though we do like the way you can trap enemies with well-timed wall-revolving.

had an American agent, the late Joel Hochberg, who would eventually become a director at Rare. Clearly, Zilec meant business.

Suitably inspired, Andy purchased a pair of the brilliantly named Intertec SuperBrain microcomputers, the same machines Zilec was using to develop its games, and with his employee, Tony Gibson, got to work on the superior hardware. "We presented our game, made on Zilec hardware developed by Chris, to him and Norman," recalls Andy. "The player had to deliver mail on land, sea and air, avoiding this super heavy bouncing crusher called Stamper. I swear I didn't know Chris' surname at the time. And he said nothing!"

> "MY CHIN HIT THE FLOOR WHEN I SAW BLUE PRINT. IT WAS REALLY SLICK, REALLY TOGETHER. BOTH CHRIS AND TIM STAMPER WERE PERFECTIONISTS"
> **ANDY WALKER**

Though this game concept stalled, it did lead to an introduction, via Joel, to Centuri in Miami, which released *The Pit* in the States, while Zilec retained the rights to convert the game to run on a *Galaxian* board in the UK – and this job was handled directly by Chris. "He played *The Pit* a lot and then wrote his version from scratch," explains Andy. "His commitment to code efficiency was extraordinary. So, in time-critical areas like screen operations, there was no loop in the software, just a string of op codes because that's faster [and uses] fewer machine cycles. You could see how he used that technique later on the Spectrum."


LEN PARKS

Andy also saw *Blue Print* in development, for which Tim Stamper did the artwork. "My chin hit the floor again. What I was viewing was really slick, really together. They were both perfectionists. They were also working on this game, *Hunky Doorkey*, with a wizard and a *Dungeons & Dragons* theme, with a quasi-3D view of a maze and you had to collect keys to open, well, doors." The latter never came out as an arcade game but the similarities with *Atic Atac*, released the following year for the Spectrum, are obvious.

Len Parks was employed at Zilec between 1980 and 1982, where his role mainly involved repairing and converting hardware and printed circuit board design. "I think Chris was there when I started and Tim joined perhaps a year later," says Len. "My claim to fame is I came up with the name *Enigma* for one of their early games. When they left, I think the writing was on the wall [for Zilec]. Norman and his business partner Dave [Swift] knew they would struggle without them. I did visit Chris and John [Lathbury] when they set up in Ashby to see how they were getting on. They didn't talk much about their business other than it was doing well. They really just wanted to show off the new Porsches they'd just purchased."

We all know just how well Ultimate and then Rare would do and that success was arguably built on the solid foundation of Tim and Chris' arcade work. All of their coin-op titles are worth firing up on MAME, not only to spot the links to their subsequent Speccy titles but as examples of the small number of arcade games developed here in the UK. And now you know that Ultimate Play The Game's overnight success was actually years in the making.

You can find Stuart Campbell's fascinating work on the Stampers' arcade history at wosland.podgamer.com

TRUE GEMS

THREE CREDIT-WORTHY ARCADE TITLES BY THE STAMPER BROTHERS

BLUE PRINT

The best-known of their arcade games, this has lots of touches which would become synonymous with Stamper games, from the cartoon characters, comical animation and very British sense of humour – die quickly and you are asked whether you actually read the instructions properly.

DINGO

Another Stamper game distributed by Jaleco, this was the first to display 'Ashby Computers And Graphics Ltd' on-screen. This fruit-flinging maze game reminds us of the colourful world of *Sabre Wulf* and, in a ridiculously prescient move, the enemies look like piñatas.

GRASSPIN

The strangest of their arcade titles, maze walls can be revolved, *Mousetrap*-style, to confuse enemies as you collect flags in alphabetical order. The screen scrolls slightly when you grab a rubber ring and float downstream, the only one of their arcade games to do so.

» [Arcade] The earliest known Stamper game is *Vortex*. Released in 1980, it's essentially a black-and-white raster-based *Asteroids* clone.

A RARE CELEBRATION

THE ULTIMATE ERA

IF YOU WERE GOING TO LEAVE COIN-OPS BEHIND AND CREATE THE ULTIMATE GAMES FOR HOME COMPUTERS, YOU NEEDED A CATCHY NAME THAT PERFECTLY ENCAPSULATED YOUR AMBITIONS. AND SO IN MARCH 1983 THE ULTIMATE LABEL WAS BORN

It's said there's no such thing as overnight success and that's certainly true when it comes to Ultimate, the label which ACG launched to assail the home-computer market. Having released four standout titles for the 16K Sinclair Spectrum during the first half of the year – *Jetpac*, *Pssst*, *Tranz Am* and *Cookie* – Ultimate's competitors were wondering just who these young upstarts were. As we've read, they were no newcomers, having spent the best part of three years developing coin-op games.

With the launch of Ultimate, three became four with Carole Ward joining Chris Stamper, Tim Stamper and John Lathbury as graphic designer and company secretary. In one of the team's first press interviews to *Popular Computing Weekly* in August 1983, Carole revealed the rationale for moving from coin-ops to home computers, "Why spend 20p to play when you can pay £5.50 to have the game whenever you want it." Such logic was dependent on the games being close to arcade quality, which happily they were thanks to Chris and John's mastery of the Z80 and Tim and Carole's artistic flair (Tim also illustrated the inlay art for each release). Computers also provided a much easier and cost-effective route to market than coin-ops. Instead of having to partner with hardware manufacturers, Ultimate simply needed to duplicate a few thousand cassettes. In the case of *Jetpac*, Ultimate's debut release, that turned out to be more than 300,000 cassettes.

This early mega-hit justified Ultimate's decision to target the Spectrum, which by the end of 1983 had become the UK's most popular home computer, selling more than 50,000 machines a month. Competition on the Spectrum was fierce, with new start-ups appearing every week, but Ultimate didn't give a jot about those guys. In the same *PCW* interview referenced earlier, John was quick to stick the boot in, "We looked at the competition and we didn't think much of the standard of software being sold." Tim then followed up with a haymaker, "There is now an awful lot of software out for the Spectrum, but ours will always sell because it's better." No sir, no false modesty here.

One secret of Ultimate's success was an advanced development system which Chris and John built. Based around the powerful Sage IV multitasking computer, the system cost "several thousand pounds" and was funded from the proceeds of their final two arcade games, *Dingo* and *Saturn*. According to Tim, the system could be used to produce a new Spectrum game *every two weeks*. That was more bluster, for sure, but it

» Ultimate's first four releases were designed to run on the core 16K Spectrum, to ensure the user-base was as large as possible.

RARE GEMS

THE SHINIEST JEWELS IN ULTIMATE'S CROWN

JETPAC

Ultimate's debut is as good an arcade shooter as you'll find on the Spectrum, featuring great graphics, clever gameplay based around refuelling your rocket ship, and eight waves of aliens to annihilate. This is the game that made you realise you needed to buy a joystick.

ATIC ATAC

Ultimate was best-known for its colourful arcade adventures and that's partly thanks to this excellent run-around. It's ostensibly a maze game with shooting elements, but you quickly discover there's much more to it thanks to all the shortcuts and secrets you uncover.

SABRE WULF

Were punters willing to pay almost double for an update of *Atic Atac*? Yes, as it would turn out, as evidenced by its run at the top of the charts. The gameplay was familiar, but the graphics, animation and overall presentation were all first class. Another genuine classic.

» [ZX Spectrum] *Jetpac* was an auspicious debut that made other developers sit up and take note.

» [ZX Spectrum] Ultimate's coin-op grounding could be seen in its second Spectrum game, the frantic bug blaster *Pssst*.

» [ZX Spectrum] *Tranz Am* was a change of pace, literally, being Ultimate's only driving game.

» [ZX Spectrum] Such was the success of *Jetpac*, the expansive sequel *Lunar Jetman* quickly followed.

was vindicated as the quality releases kept on coming. Ultimate's first dedicated 48K titles, *Lunar Jetman* and *Atic Atac*, were reviewed in early 1984 and used the extra memory to create larger, multi-screen game worlds. And that was just a taste of what was to follow, as that year saw the team firing on all cylinders to produce the first three Sabreman adventures – *Sabre Wulf*, *Underwurlde* and, the debut 'Filmation' title, *Knight Lore*. This hat-trick of hits further established Ultimate as the UK's most exciting, respected and dependable software house, with gamers happy to pay a premium of £9.95 to own its latest treasures.

By this point Ultimate had attracted a certain mystique, largely due to the way it marketed its games. There were no previews or screenshots in the mags, just occasional snippets based on whispers. The first you'd know about a new game was when a full-page ad featuring Tim's striking artwork appeared in print. To appreciate a game like *Knight Lore* you had to actually load it up and watch the isometric graphics pop off the screen. Interview requests with the Stampers went unanswered, leading to them being branded "secretive" and "tight-lipped" by the press, with one mag (*Personal Computer Games*) even calling their PR "a shambles"! Obviously there was nobody in a PR role, just the original 'gang of four' plus a small number of new hands to keep the ship steady. One of those was Carole's brother Huw Ward.

> "THEY JUST WANTED TO MAKE THE GAMES AND BE LEFT ALONE, NOT COURT THE LIMELIGHT"
> **HUW WARD**

"I did a bit of everything to be honest," he says, "but mainly all the testing of the games. I decoded the graphics from dots on paper into hexadecimal and was also involved in a bit of design, for instance, positioning all of the furniture in *Underwurlde* to make sure the jumps could be made. I also packed and sent out all the games to the distributors and

KNIGHT LORE

How do you sum up *Knight Lore* in this tiny space? This was the blueprint for the isometric adventure and it led to numerous clones (including a couple by Ultimate itself). For gamers of a certain age, seeing this game running for the first time was a defining moment.

ENTOMBED

The Egyptian-set sequel to *The Staff Of Karnath* takes the original and adds a bigger map and better puzzles – and crucially there's less backtracking. Those fat sprites are retained, but they don't detract from this cracking adventure. This is easily Ultimate's best C64 release.

GUNFRIGHT

The final Ultimate game the Stampers worked on is a fitting swan song, building on the Filmation II system that *Nightshade* used (and exposing that game as the tech demo it clearly was). Best of all, it's loaded with good humour. Check out the 'horse' you ride!

» [C64] Firebird published a trio of conversions for the Commodore: *Sabre Wulf* (pictured), *Underwurlde* and *Nightshade*.

» [C64] Inspired by the Sixties film *Jack The Giant Killer, The Staff Of Karnath* was the first adventure to star Sir Arthur Pendragon.

» [C64] The underrated *Imhotep* was developed externally by Manuel Caballero, who submitted his game to Ultimate on-spec.

LOST GAMES

THE TITLES PLANNED AND THEN CANNED

The most infamous lost game of the Ultimate era is *Mire Mare*, the fifth and final Sabreman adventure. We put this issue to bed back in **Retro Gamer** 105, confirming that some design work was done and the cover art was created, but no actual coding took place – despite what people have claimed over the years. There were also several conversions that never made it, including a version of *Cookie* for the BBC Micro by Paul Proctor that went unreleased despite being finished. Later, Ultimate's final release *Bubbler* was being converted to the C64 by Lynsoft and was partially complete before the plug was pulled on account of it running too slowly. Both games have since surfaced online.

Thanks to Frank Gasking of Games That Weren't, we've also heard whispers about another 'lost' Ultimate title, initially via Ste Pickford, who worked with the Stampers at Rare. Ste once told Frank, "They had box files on their shelves containing all of their design work for previous games – *Jetpac*, *Pssst* and so on. I was always fascinated by a file labelled *Glug Glug*. Whenever I asked them about it, they would get all coy and say something like, 'Ah, that idea was a bit too advanced…'"

» [ZX Spectrum] *Mire Mare* was supposed to hark back to the style of *Sabre Wulf*, so this mock-up by Jarrod Bentley imagines how it *might* have looked.

during my lunch breaks I helped out in the newsagents on The Green in Ashby that the Stampers' parents ran." As you can see it was a close-knit family affair, not a brash Imagine-style business, which largely explains why they shied away from the media. "I liked the way they kept an air of mystery around them," says Huw. "They just wanted to make the games and be left alone, not court the limelight."

Huw also recalls the team working at a relentless pace. "It was mostly finish one game and move straight onto the next, especially in the early days. Later on there was definitely more than one game on the go at once." As the game tester, Huw was at least able to spend time playing their creations. "I enjoyed most of the games. I wore holes in my fingers testing them. I think *Pssst* was a better game than it did in the market and would make a good mobile game now. *Tranz Am* was one of my least favourite Ultimate games."

Although Ultimate focussed on the Spectrum, the plan was always to convert the hits to other systems. The VIC-20 version of *Jetpac* was handled in-house, but most non-Z80 conversion work was farmed out to external programmers. It was only a matter of time before Ultimate targeted the Commodore 64, with rumours of a *Jetpac* conversion swirling for months. In the end Ultimate did the unexpected and published an original game that was not created in-house. Released in December 1984, *The Staff Of Karnath* was an arcade adventure developed by the Thomas brothers – Dave coding, Bob on graphics – which they had submitted to multiple publishers looking for a deal. To their surprise, Ultimate snapped up the game and then contracted the brothers to produce a further four titles for the C64.

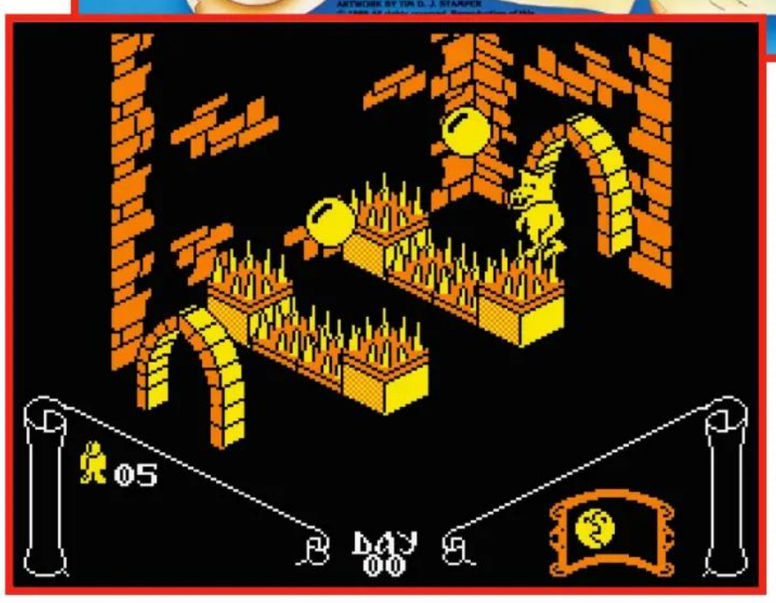
"We got along with them very well generally," says Dave. "They were always very friendly, polite and accommodating. Bob and I visited Ultimate a number of times and it was a pretty basic setup with piles of games in boxes and posters everywhere. You wouldn't know there was anything special about the place at all. The only real giveaway that they were very

» [ZX Spectrum] With *Pentagram*, Ultimate was perhaps guilty of taking one too many trips to the well

» For the 1988 best-of release *The Collected Works*, Tim Stamper contributed a map-style poster that referenced the firm's biggest hits.

> "I VISITED ULTIMATE A NUMBER OF TIMES AND IT WAS A PRETTY BASIC SET UP WITH PILES OF GAMES IN BOXES AND POSTERS EVERYWHERE"
> **DAVE THOMAS**

» [ZX Spectrum] Having caught up with the no-good varmint in *Gunfright*, you have to win a shoot-out to claim the bounty.



» [Amstrad CPC] The Amstrad version of *Knight Lore* benefitted from the use of a second foreground colour.

» [VIC-20] A faithful version of *Jetpac* arrived on the VIC just a few months after the Spectrum original.

» Did you know that each edition of *Alien 8* featured unique cover art? From left to right: the Spectrum, Amstrad CPC and BBC Micro releases.

successful was the fact that there was always a Porsche 911 Turbo parked outside." Dave also remembers how motivated the Stampers were. "Tim and Chris were clearly both very clever, with Tim having tremendous business acumen, along with being a terrific artist, and Chris having outstanding technical ability with both software and hardware. They were both workaholics though and would think nothing of working from seven in the morning until gone midnight every day. We did find them pretty hard to keep up with."

That drive resulted in further Spectrum successes in 1985. There was *Alien 8* followed by *Nightshade*, which was the first title to use the scrolling Filmation II system. *Nightshade* also included a tiny detail that would change everything for Ultimate. Tucked away on the inlay was a strange new name, Rare Ltd. As we all now know, this was the company Chris, Tim and Carole (now Stamper, after marrying Tim in 1985) created to develop games for Nintendo's NES console. Chris and Tim would work on one final game, the 3D Western *Gunfright*, before selling off the Ultimate name and back catalogue to US Gold and moving their interests over to Rare.

This was not the end for Ultimate however. Four more original titles followed over the next 18 months – *Cyberun*, *Pentagram*, *Martianoids* and *Bubbler* – and each received mixed reviews, a far cry from the universal praise showered on earlier releases. They were published by US Gold but, despite various claims, they were *not* developed by US Gold's teams. "These games were made around the time Rare was set up, separately from Ultimate," confirms Huw. "I had a lot to do with them, as did John and Mark Betteridge." Mark had joined Ultimate in 1985 as a programmer, initially working on *Nightshade*. "I moved over to Rare after *Bubbler* was released and Ultimate was left with John," continues Huw. "I'm not too sure how that all finished up. John never worked for Rare." Following the release of *Bubbler* in 1987 it was announced that Ultimate was still running and Sabreman's long-awaited adventure *Mire Mare* was coming next. It never arrived though. "I never saw any code for *Mire Mare*," states Huw, almost before we can get the question out of our mouth.

The Ultimate years were a hugely memorable time for gamers, particularly Spectrum owners, and also those on the inside. "It was hard work and long hours, but also everyone was pulling together," reveals Huw. "It was also good fun. I remember building a race track in the warehouse across the road out of all the stock of cassettes and racing a Sinclair C5 around them until Tim caught me one day. I got away with it as he started racing around and crashed and broke the motor on the C5. I also used to climb and decorate the massive Christmas tree they put up on The Green every year, which was dangerous but great fun."

The star that Huw placed on top of Ultimate's tree might have faded in later years, but an even brighter future lay just around the corner…

» [NES] When Rare was first establishing itself, the firm produced a number of game show-based NES titles.

» [NES] *Solar Jetman: The Hunt For The Golden Warpship* was created by the Pickford brothers.

» [NES] It was a sign of things to come that Rare's NES speedboat title Cobra Triangle was as hard as nails.

A RARE CELEBRATION

THE NES & SNES ERA

THE MID-EIGHTIES UK GAMES CRASH INSPIRED ULTIMATE'S TIM AND CHRIS STAMPER TO FORM RARE, AND THEIR NEW FIRM WENT GLOBAL WITH ITS HIT NES AND SNES TITLES. EARLY RARE HIRES KEVIN BAYLISS, PAUL MACHACEK AND CHRIS SUTHERLAND RECALL THOSE DEFINING YEARS

It takes courage to walk away from something exceptional, but in the mid-Eighties Tim and Chris Stamper did exactly that. They left behind the British home-computer games market where they had excelled. They trusted their highly respected Ultimate label to others. They set out on a new path, created a new company and bet everything on a Japanese games console. The gamble would pay off handsomely. According to an article on IGN, the Stampers visited Nintendo and revealed how they had reverse-engineered the Famicom. Nintendo was so impressed that it offered the Stampers an unlimited budget to produce games for the console, free of the restrictions that hindered other developers.

Coder Paul Machacek was one of the teenagers that the Stampers hired for their fresh endeavour Rare, and he views its formation as timely. "Rare was incorporated in 1985 in order to switch focus from the domestic market, which had crashed [Acorn and Sinclair were suffering major financial issues, while Sinclair distributor Prism and Oric both collapsed], to the new Nintendo system," Paul notes. "It was unknown in the UK, but was selling well in Japan and was launching in the US. It was obvious Rare needed a wider output, so it began hiring. I was unusual in that I moved some distance, but everyone else at Rare in the late-Eighties lived locally, and we were largely straight out of school."

One of the very first youngsters taken on by Rare was artist Kevin Bayliss, who remembers his interview as a tour of the firm's rural offices and its work in progress. "That evening was the first time I laid eyes on an NES," Kevin enthuses. "As I was being shown around the farmhouse I saw the title page for *Elrond* – the Japanese *Wizards & Warriors*, and an early version of *Cobra Triangle*. It looked like a water-based *RC Pro-Am*, which I also saw that night. Then there was *Wheel Of Fortune*, which had an amazing animation of Vanna White."

When Paul joined Kevin at Rare, the firm was knee-deep in licensed NES projects, which as Paul explains was thanks to the hard work of the studio's man in the US. "The focus was on lots of bread-and-butter jobs to keep the lights on, along with some self-funded original titles," Paul remembers. "When I joined, each programmer had a game, and I was given *Super Off Road*. Our agent Joel Hochberg was based in Miami, and he was signing up IPs and conversions with publishers. So we ended up doing a lot of those."

One of Rare's NES movie licences was *A Nightmare On Elm Street*, which looked the part and catered for up to four players, as its artist/co-designer Kevin points out. "We had to adhere to the style and look of the IP, because the game was seen as extended marketing for the movie," Kevin recalls. "So we used what little reference material we received to accurately represent it, and we incorporated many elements of the film. We also utilised the NES Four Score peripheral, which allowed four players to simultaneously take on Freddy."

Another of Rare's film-based NES titles also had visuals by Kevin, with Paul on coding duties. The programmer recollects doing research, and fretting over its design. "Mark Betteridge and I sat up late one Friday night and watched the *Beetlejuice* film," Paul recounts. "There was a lot of wacky stuff in it, plenty of imagery that could look cool if you could cram it into the NES, but there weren't scenes that could be easily gamified. So we ended up with a platformy/collect-a-thon/avoid the monsters title."

» [NES] Rare's earliest NES release is the slick and highly enjoyable downhill skiing title *Slalom*.

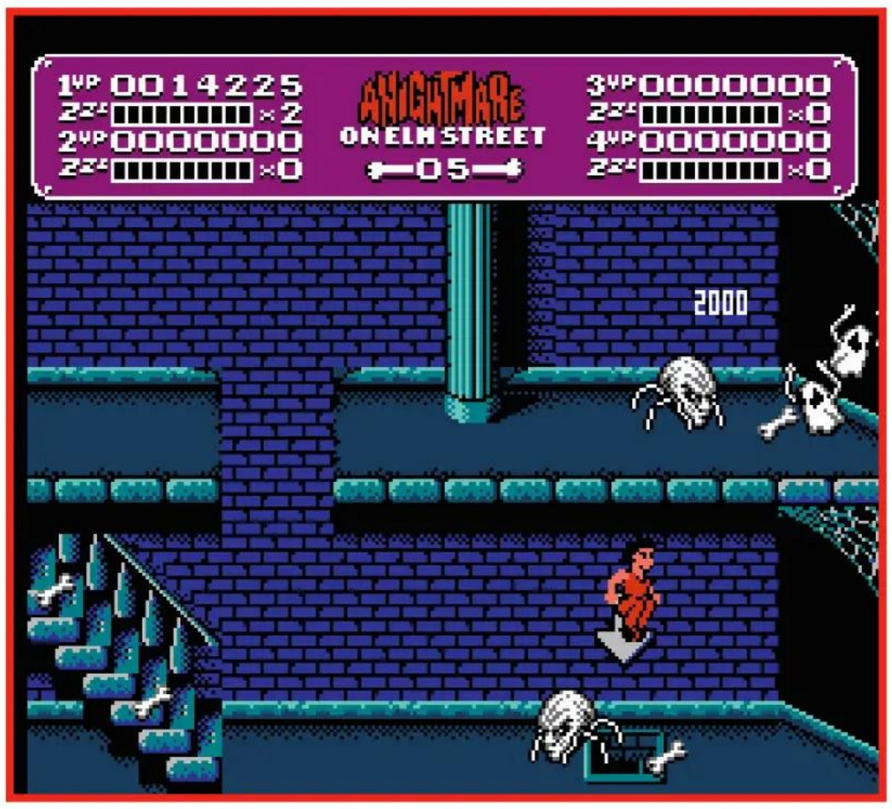
Two of Rare's other NES games required a trip to the US and a different approach, in that their publisher had names and concept art, but little else, as Kevin found out. "I remember having a meeting where the MB guys held up cards with artwork for *Time Lord* and *Captain Skyhawk*," Kevin says quizzically. "There were no suggestions for visuals or

» [NES] There's very little of the film in Rare's NES *Beetlejuice* game, but it's a fun platformer all the same.

» [NES] Coin-op conversions such as *Super Off Road* were bread and butter to Rare during its NES years.

"I WAS UNUSUAL IN THAT I MOVED SOME DISTANCE, BUT EVERYONE ELSE AT RARE IN THE LATE-EIGHTIES LIVED LOCALLY, AND WE WERE LARGELY STRAIGHT OUT OF SCHOOL"

PAUL MACHACEK



» [NES] The Rare NES horror flick licence *A Nightmare On Elm Street* can be played with up to three friends. As you can see, we don't have any.

RARE GEMS

MEMORABLE RELEASES FROM RARE'S NES AND SNES YEARS

WIZARDS & WARRIORS

The platforming in Rare's mediaeval-themed NES adventure brings to mind *Underwurlde*, but its gameplay is deeper, thanks to power-ups, boss fights and lock-and-key puzzles. It's a little like a coin-op, in that while foes constantly drain your energy bar you have unlimited continues.

RC PRO-AM

The first in a popular series, the objective of *RC Pro-Am* is to race radio-controlled vehicles along overhead, isometric courses. Its AI drivers provide you with stiff competition, but the game's long-term appeal comes from the upgrades and weapons that you find on its tracks.

BATTLETOADS

Designed by Rare to take the fight to the Teenage Mutant Ninja Turtles, *Battletoads* has its share of platforming, but also a beat-'em-up element and tests of agility. Rare's NES classic is famous for its unforgiving speeder bike stage, and generally known for its overall difficulty.

DONKEY KONG COUNTRY

Thanks to its stunning pre-rendered visuals, Rare's hit SNES platformer was able to compete with games on consoles from the generation after Nintendo's 16-bit system. It has various collection-based sidequests, and its solo mode is complemented by an exceptional two-player option.

DONKEY KONG LAND

Rather than developing a monochrome version of *Donkey Kong Country* for the Game Boy, Rare's approach to *Donkey Kong Land* was to combine the characters and core elements of its SNES game with fresh gameplay, levels and narrative. The handheld hit also has new enemies and a new boss.

» [Game Boy] Rare's *WWF Superstars* brought the franchise's melodramatic wrestling to Nintendo's Game Boy.

LOST GAMES

THE UNRELEASED TITLES OF RARE'S NES/SNES ERA

For one reason or another there were a lot of Rare games that went unpublished during its NES and SNES years, and as yet none of them have seen the light of day. Two of the earliest were the vertical shoot-'em-up *Space Hunter* and the Stone-Age Olympics title *BC Games*. Both were NES games developed by Bob and Dave Thomas, the authors of Ultimate's *Sir Arthur Pendragon* series. Other unreleased titles from that time were Kevin Bayliss and Paul Machacek's street wrestling game *Wrestlerage* for the SNES, and *Super Battletoads* for the SNES and Game Boy, which were based on the coin-op. Then there was Simon Hallam's *Screwballs Superleague*, a crazy sports game for the NES with spinning top players, and *The Valley Of The Kings*, an impressive NES variant of *Knight Lore*. Further NES cancellations included the Pickford brothers' violent roller-skating game *Roller Thrasher* and their isometric *Glider Rider* follow-up *Wolverine*. The NES coin-op conversion *Exterminator* and the NES computer-game conversion *Chess Master 2000* were two more casualties. Then last, but certainly not least, there was the glorious-looking SNES adventure *Project Dream* (below), which was ultimately changed beyond recognition, moved to the N64 and renamed *Banjo-Kazooie*.

design, just 'blue sky' ideas, as they put it. So we went off to make those games. I really only created the main character sprites for *Time Lord*, and some basic moves, and then I think I moved onto *Battletoads*."

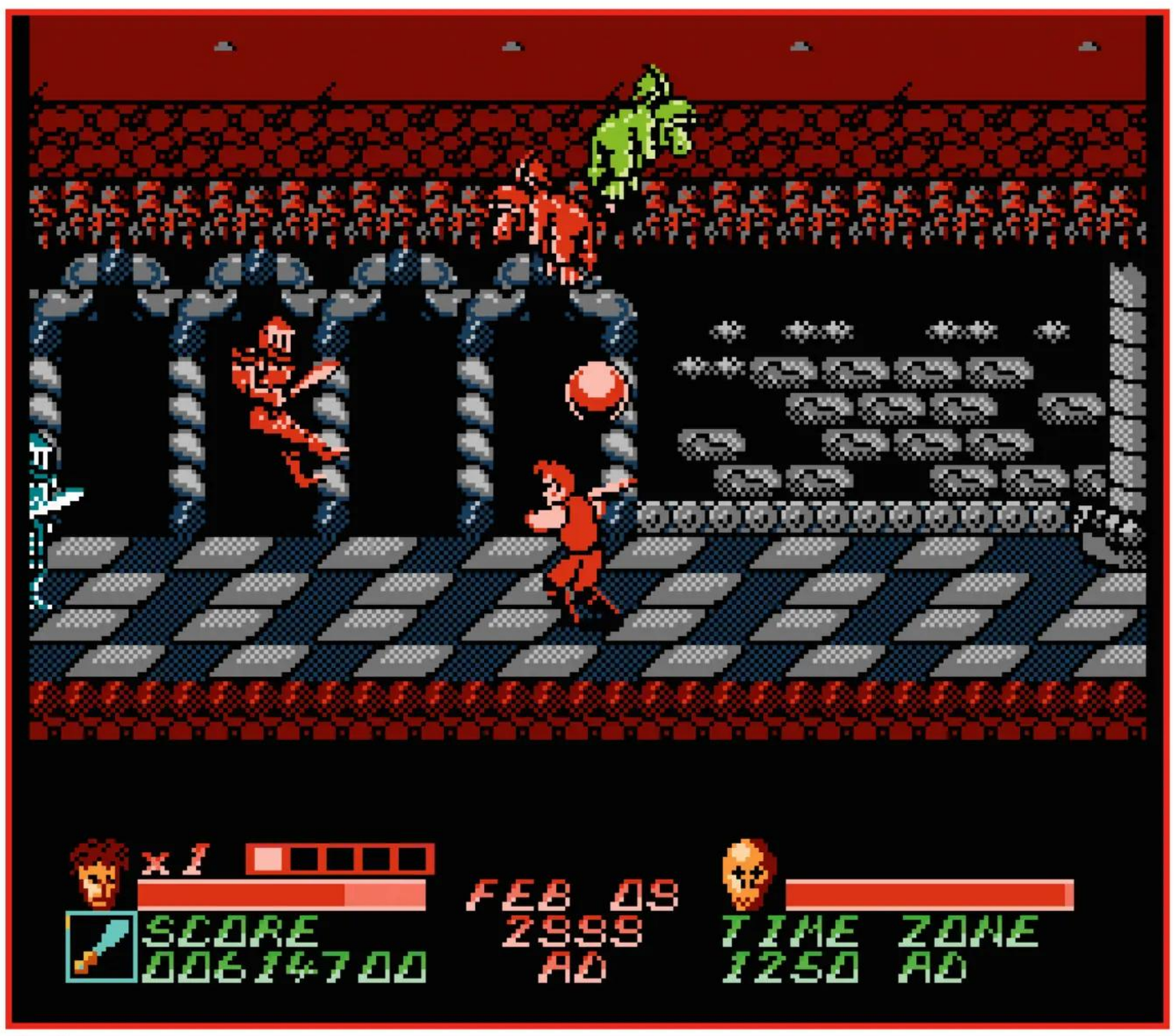
Boasting eclectic levels and taxing gameplay, *Battletoads* stretched the NES to its limits. As well as creating its amphibian heroes, Kevin also co-designed the game. "Tim was so experienced with the NES, and Mark was great at finding tricks to push the system, and they worked extremely well together on mixing up different gameplay styles for *Battletoads*," Kevin beams. "Ultimately they created a great game that really pushed the NES – and don't forget the iconic music!"

Before *Battletoads* was completed, Rare took on coder Chris Sutherland, partnered him with artist Trevor Hill and assigned the pair a *Spider-Man* title for the Game Boy. "I think it was Carole Stamper that came in with a foolscap folder with information on Spider-Man, and told me this was what I would be working on," Chris recollects. "I remember Trevor and I talked about the coin-op *Kung-Fu Master*, and about maybe basing it around that. So we designed the first horizontal level, and then felt that we should do vertical levels too. But those didn't have quite as much variety, and that was why there were less of them."

The next project Kevin took on was also for the Game Boy, again in partnership with Paul, who found the console's setup familiar enough that coding for it came naturally. "We banged out *WWF Superstars* in around three months after it had been in production elsewhere for probably nine months," Paul reveals. "I was very comfortable with the Game Boy within a very short time. Forget about what it looked like on the outside, internally it was very similar to the NES, so writing games for it was similar."

For his part, Kevin felt at home with the Nintendo console's visual capabilities, and appreciated the tricks that his programming co-designer coaxed out of the system. "There were no colours to worry about with *WWF Superstars*, just three shades of grey, or green," Kevin considers. "That meant that arms and legs could be used across different wrestlers more because there were no palette clashes, and Paul did a lot of cool coding to create screen shake and other effects."

But while Rare's Game Boy output seemingly defied the handheld's limitations, it was outshone by a coin-op the firm was creating using cutting-edge tech, as Paul explains. "We experimented with pre-rendered graphics increasingly over the years after getting our first SGI machine," Paul reviews. "By the time that *Battletoads* for the arcades was created, lots of our stuff was being rendered, and our animations had much higher framerates, so we



» [NES] Rare's *Time Lord* foreshadows *Battletoads* with its fun platforming, hectic brawling and stiff challenge.

» [NES] Although superficially similar to *Boulder Dash*, the NES title *Digger T Rock: Legend Of The Lost City* is distinctively Rare.

> "TIM WAS SO EXPERIENCED WITH THE NES, AND MARK WAS GREAT AT FINDING TRICKS TO PUSH THE SYSTEM, AND THEY WORKED EXTREMELY WELL TOGETHER ON BATTLETOADS"
>
> **KEVIN BAYLISS**

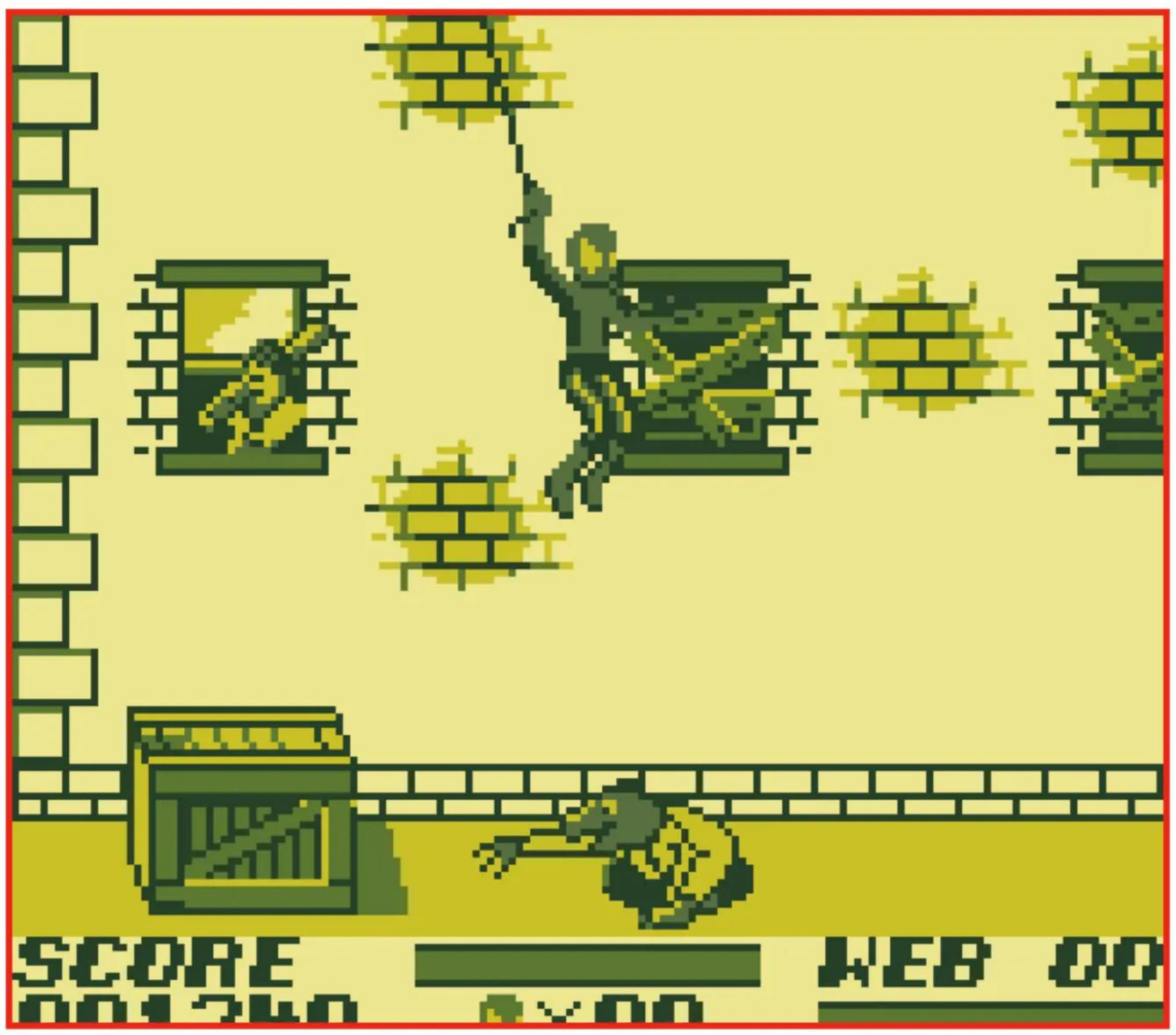
knew we could make something that looked fantastic in the arcades."

As lead coder of Rare's *Battletoads Arcade* coin-op, Chris worked closely with those building its hardware, and also the game's designer, which proved to be a novel experience. "*Battletoads* arcade was the first game we had a dedicated designer on," Chris discloses. That was Gregg Mayles, and it was interesting, because he didn't have any tools to use. So he sat right next to me and I would code. I would finish something and say, 'Here you go, try that.' But when he couldn't do anything he would just have to wait, so I had to think of the quickest way to get things done!"

A secondary role Chris played in the *Battletoads* coin-op's creation led to a second career in gaming. It was pioneering work, but he makes light of the process. "I volunteered to do announcements for the characters in the *Battletoads* arcade game, and I remember standing in front of a microphone in this room, and saying in a really stupid voice, 'Zitz!!! Pimple!!! Rash!!!'" Chris says with a grin. "From then on, I became the guy who did the voices. If you had suggested hiring an actor people would have thought you had gone crazy! They wouldn't have understood why we wouldn't just do it ourselves."

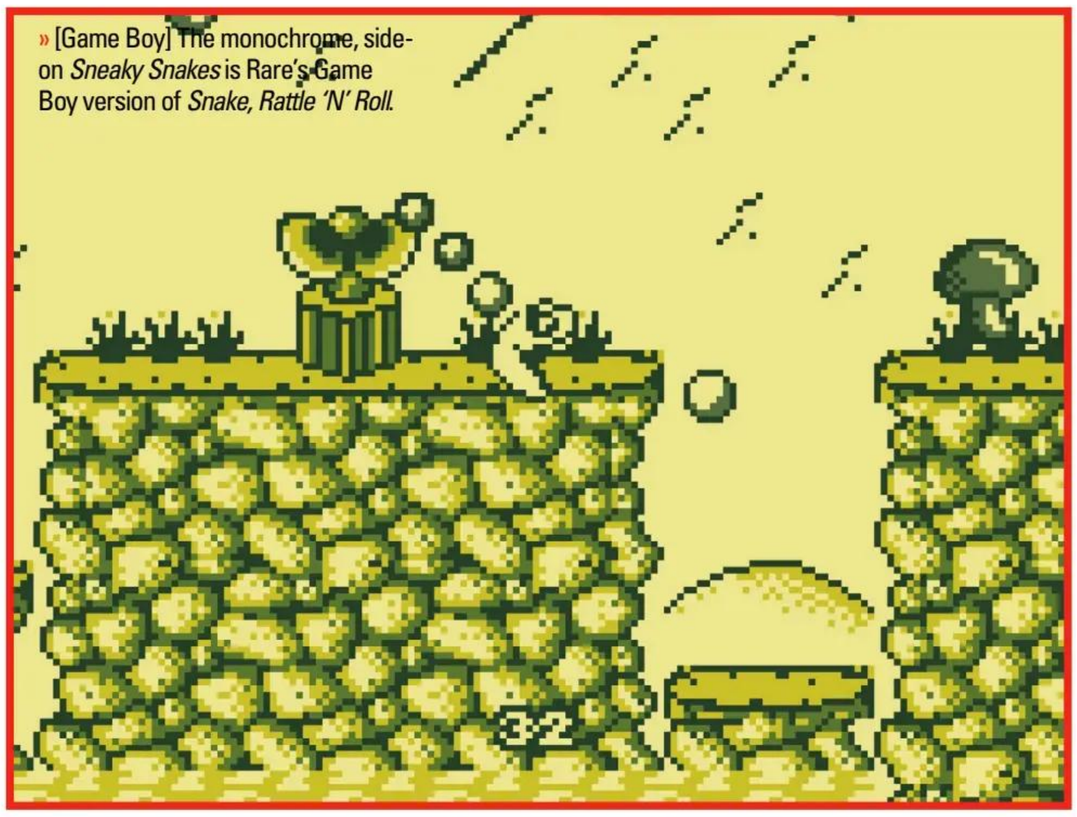
Adaptations of the arcade game were in progress as the coin-op launched, and while the SNES version didn't get far, Paul went on to finish its Game Boy counterpart. "We did a fourth Game Boy *Battletoads* title – *Super Battletoads*," Paul divulges. "It was finished, but unfortunately the publisher Tradewest felt that the *Battletoads* coin-op had under-performed, so it pulled the plug on the

» [Arcade] *Battletoads Arcade* does things bigger and more brutally than its console counterparts.



» [Game Boy] One of Rare's earliest Game Boy titles is based on the Marvel superhero Spider-Man.

» [SNES] Essentially NES *Battletoads* enhanced for the SNES, *Battlemaniacs* is a showcase of the 16-bit system's capabilities.



» [Game Boy] The monochrome, side-on *Sneaky Snakes* is Rare's Game Boy version of *Snake, Rattle 'N' Roll*.

» [Game Boy] Don't let its name fool you; the Game Boy *Battletoads* is quite different from the NES *Battletoads*..

» [Game Boy] A descendant of *Head Over Heels*, Rare's *Monster Max* was Jon Ritman's final isometric outing.

» [SNES] A platforming tour de force, *Donkey Kong Country 2: Diddy's Kong Quest* somehow outdid Rare's original game.

franchise. It was very disappointing at the time, but that's life!"

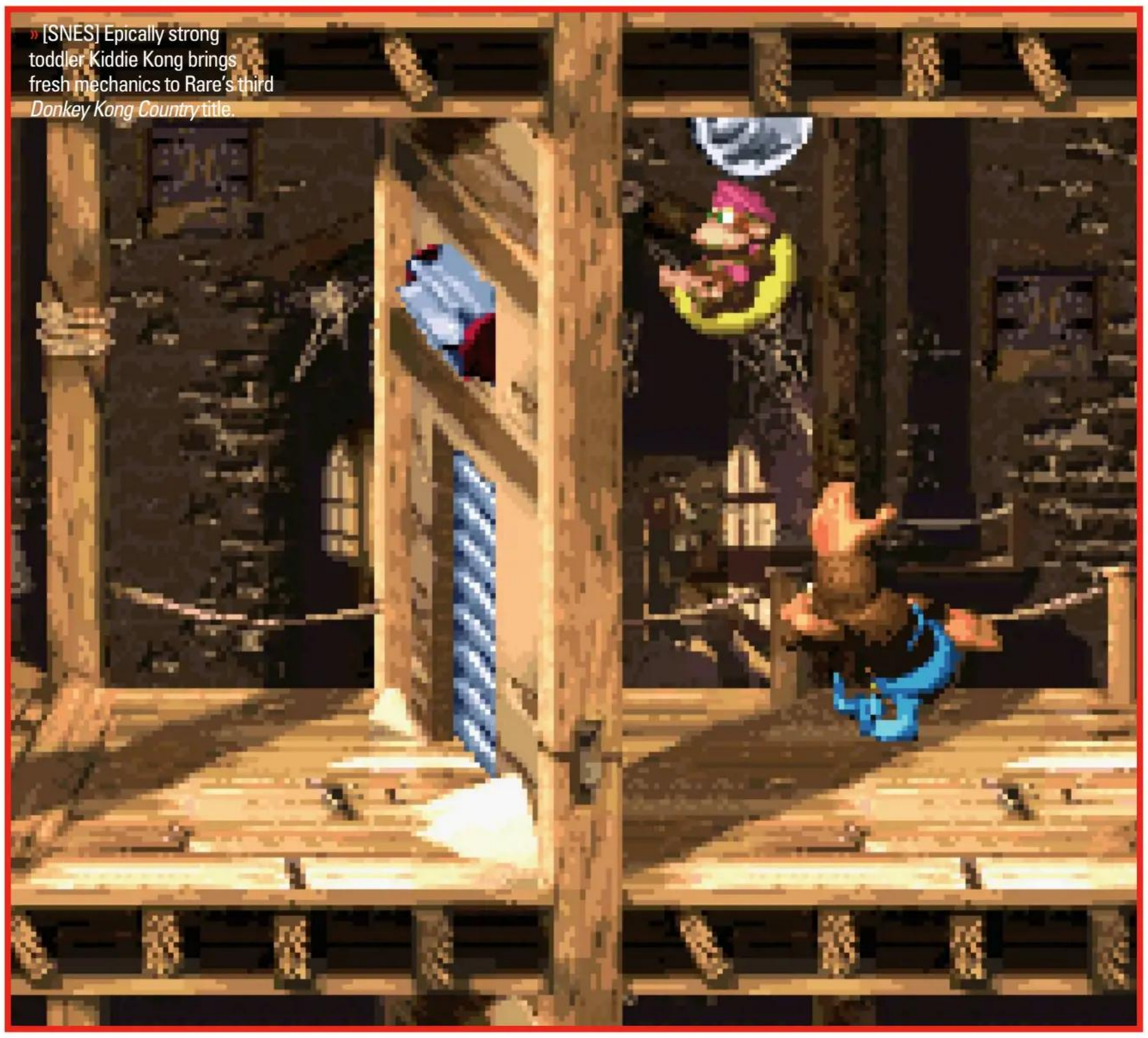
After working on various aspects of *Battletoads Arcade*, Kevin got to work on another arcade game, but we'll cover that in The N64 Era. He also found time to assess Nintendo's latest console, which provided Rare with a wealth of opportunities. "I was immediately impressed by the SNES' colour palette and audio," Kevin appraises. "Its Mode 7 rotation was also extremely cool; this was a tool that could be used to create racetracks or enormous moving characters. However it also gave us a dilemma, as we would regularly start each game's design by asking how we could use Mode 7. Often there wasn't really a need, but we used it whenever we could."

Whether or not Mode 7 would have been used in an early SNES concept Kevin and Paul worked on is unknown, but its coder puts its downfall down to its lack of design.

"Kev and I worked on a SNES wrestling game called *Wrestlerage* with massive characters, like a four-way *Street Fighter II*," Paul muses. "But there was no design direction, and I got to the point where I'd had enough."

After *Wrestlerage*, Rare poured effort into adapting pre-rendered million-colour graphics for the SNES, which as Chris explains was far from guaranteed to happen. "We had custom hardware with custom software on it, which was like Rare's version of Photoshop. It contained features that allowed you to take in an image with millions of colours and convert those down to 16. There was a lot of work done with that, and that was key. When we saw it working we thought the whole idea could work."

The SNES project to benefit from this groundwork was an overhaul of Nintendo's Eighties coin-op *Donkey Kong*, and as Kevin notes it excelled in all areas of its design. "*Donkey Kong Country* used all of the elements that the SNES had in its arsenal to



» [SNES] Epically strong toddler Kiddie Kong brings fresh mechanics to Rare's third *Donkey Kong Country* title.

create a fantastic-looking, awesome-sounding, great-playing game. Add to that the pre-rendered graphics that we created using state-of-the-art tech and you had something that really stood out. Of course, as Shigeru Miyamoto said to us, 'Good graphics alone do not make a good game,' which is absolutely true, so we worked very hard on its design too."

> "THE ONE VISIT BY NINTENDO THAT I REMEMBER WAS WHEN MIYAMOTO CAME. ONE OF THE THINGS HE SUGGESTED WAS THE HAND-SLAP IN DONKEY KONG COUNTRY"
> **CHRIS SUTHERLAND**

From a coding perspective, *Donkey Kong Country* put the SNES through its paces, which was partly down to the trust Rare's founders put in its staff, as Chris confirms. "All of the visual effects in *Donkey Kong Country* were coded by Brendan Gunn," Chris attributes. "Tim Stamper would come in every other day with another challenge for him, like he would want to get multiple layers of snow in parallax. Brendan would ask, 'How can I do that?' But he would always manage. He would whisk up these amazing things in response to an almost never-ending set of requests."

Another source of suggestions for *Donkey Kong Country* was the creator of the game's hero, although Chris initially had doubts over his words of wisdom. "The one visit by Nintendo that I remember was when Miyamoto came," Chris recalls. "One of the things he suggested was the hand-slap in *Donkey Kong Country* to get things out of the ground. I think we wondered if that would work, but we tried it out, and it certainly added something to the game."

As with *Donkey Kong Country*, Rare's later SNES and Game Boy titles sold in their millions, and as Chris notes, they kept selling after Rare left the consoles behind. "Sales of the games we made in that era just kept trickling in, and those tail-end sales helped us for many years after," Chris acknowledges. "That allowed us to spend longer on the games that came later, whereas other companies may not have had that funding."

On reflecting on Rare's NES and SNES years, Kevin speaks fondly about the firm's early days, the systems it developed for them and its innovative development tech. "I am incredibly grateful to have been there at Rare during that golden era," Kevin considers, "when we were using pre-rendered sprites, and had such great systems to work with." Paul concurs, and he finishes with a confirmation that the flame lit by Rare's creative spark during its seminal years still burns brightly. "I've always loved the passion of folks at Rare to go to the nth degree to give players the best experiences possible," Paul reviews. "I would see teams doing that in the late-Eighties, and I've seen teams doing that in the studio this week."

» [Game Boy] Rare's technical know-how allowed the firm to adapt its *Killer Instinct* coin-op for the humble Game Boy.

TRUE ORIGINALS

NOTABLE ORIGINAL IPS FROM RARE'S NES AND SNES DAYS

As well as a wealth of licensed titles, Rare created various original one-offs during its formative years. *Cobra Triangle* for the NES is a good example. Best described as an isometric combat racer, it sends you into troubled waters in an armed speedboat. As well as racing rivals, you tackle logistical challenges, avoid sharks and take on sea monsters. *Snake, Rattle 'N' Roll* (below) is also isometric and for the NES. Its challenge is to navigate patchwork playfields as one of two snakes, gobbling up little creatures with the aim of putting on enough weight to tip a scale that opens the level exit. *Digger T Rock* is side-on, and takes its cue from *Boulder Dash*. The goal is to dig, climb, crawl and jump your way through caves, while amassing treasure and looking for the way out. You can avoid the caves' hostile inhabitants or repel them with your trusty shovel, which doubles-up as a weapon. Then probably the most unique of Rare's early original titles is Jon Ritman's quirky humoured *Monster Max*, in which you guide the title character though a maze of isometric rooms, each filled with logistic puzzles that require specific tools and pixel-perfect platforming to overcome.

A RARE CELEBRATION

THE N64 ERA

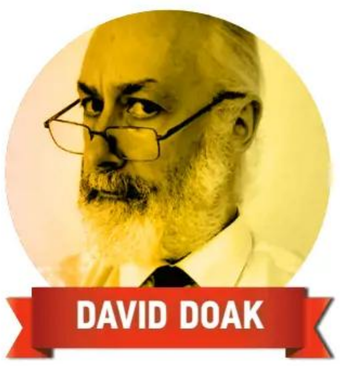
THE NINETIES SAW RARE'S RELATIONSHIP WITH NINTENDO GROW EVER STRONGER, RESULTING IN SOME OF THE FINEST GAMES TO GRACE THE N64. WE ASK FIVE FORMER RARE EMPLOYEES TO RECALL THOSE GOLDEN YEARS

To say the Nintendo 64 years were a period of transition for Rare seems silly. The company had already moved from the arcade to home computers in the early Eighties and then hopped into bed with Japanese giant Nintendo to produce console titles later that decade. Yet the Nineties did see big changes for Rare, as it got to grips with new hardware platforms, explored different game genres and fully embraced 3D.

Before Rare began making its N64 masterpieces, though, it was busy revisiting its arcade roots. Having already worked on the coin-op *Battletoads Arcade*, artist Kevin Bayliss was delighted to stay in the arcade for another scrap. "I'd wanted to work on my own arcade beat-'em-up since the day I arrived at Rare and would spend hours drawing fighting characters in an isometric view on paper," he grins. "Once we had the cool new SGI machines to play with, I wanted to make a 3D versus fighter and Nintendo wanted us to develop one for their upcoming, super-secret 64-bit machine. I was over the moon when they gave the go-ahead to create a fighting game for the arcade, too. It was an amazing opportunity."

The result would be 1994's *Killer Instinct*, a title which capitalised on the huge popularity of one-on-one fighters unleashed by the *Street Fighter* and *Mortal Kombat* series, but brought its own visual style and gameplay innovations, notably the emphasis on combos and Combo Breakers. Unsurprisingly, a sequel followed two years later. "I think *Killer Instinct 2* looked better than the original, but it wasn't for everyone," acknowledges Kevin. "I discovered that you could make the particles on hair glow, and this created a nice trailing effect, so I'd emit 'glowing hair' from the sword or leg carrying out a move and it created great-looking powered 'whoosh' effects… but the game wasn't as well-received by the original fans. It had lost some of its gritty character."

The original game had been ported to the SNES but not to the N64, which finally got its share of No Mercy finishing moves and Ultimate Combos in the form of *Killer Instinct Gold*. Kevin wasn't



DAVID DOAK

GRAEME NORGATE

KARL HILTON

KEVIN BAYLISS

MARK STEVENSON

RARE GEMS

FIVE TITLES THAT MADE THE N64 SHINE

GOLDENEYE

■ We came for the single-player story and stayed for the deathmatches. Credit to coder Steve Ellis for creating the many multiplayer modes. As David Doak, the man responsible for designing those varied missions, puts it, "It looks dated but the gameplay is solid."

DIDDY KONG RACING

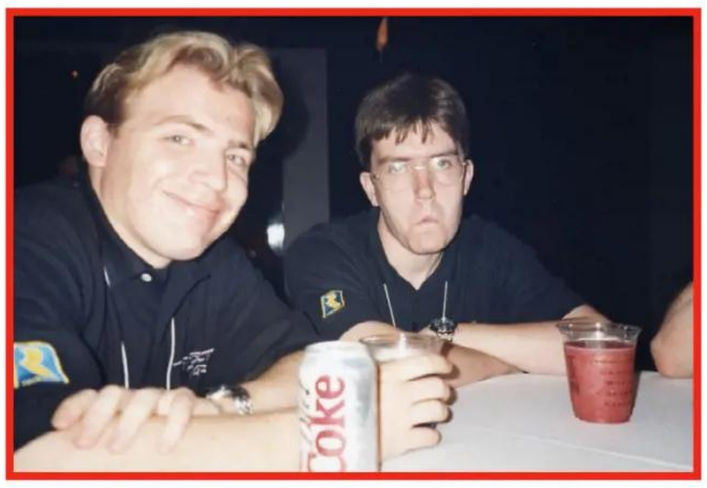
■ Adding hovercrafts and aeroplanes to the kart-racing formula meant what could have been a *Mario Kart* clone became a hugely entertaining racer and also introduced future stars Banjo The Bear and Conker The Squirrel to eager N64 gamers.

BANJO-TOOIE

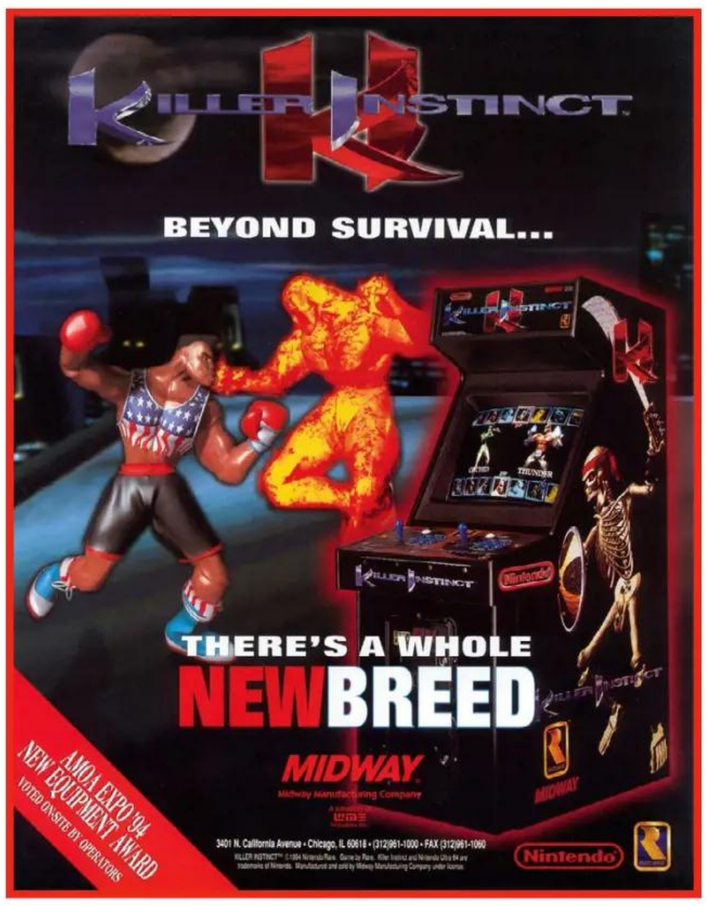
■ Rare became synonymous with the 3D platformer during its N64 days and we are highlighting this one as it combines the best bits of *Banjo-Kazooie* and *Donkey Kong 64*, puts more emphasis on puzzle solving and also includes some sweet multiplayer minigames.

» [Arcade] *Killer Instinct* was a huge hit in the arcades, reportedly clocking up 500 million plays by May 1995.

> "TAKE THE AMOUNT OF INTERACTIVITY IN CONKER'S BAD FUR DAY. I'M NOT SURE HOW YOU COULD HAVE ACHIEVED THAT ON THE ORIGINAL PLAYSTATION"
> **GRAEME NORGATE**



» Karl Hilton (left) and Steve Ellis at the 1998 AIAS awards, where *GoldenEye* scooped four gongs. Karl has clearly just told Steve he's playing as Oddjob at the aftershow deathmatch party.



» *Killer Instinct* is still going strong today, thanks to a new game in 2013 that was created by Double Helix Games with input from Rare.

involved, though, as he had moved on to a new team and a very different style of game. "With *Diddy Kong Racing* we weren't really trying to compete with *Mario Kart* at all," he assures us. "The initial plan was to have an 'adventure' with a racing element which took place in a kind of theme park world. As we explored the idea of playing in a 3D environment, we discovered new ways to have fun, and so it kind of evolved. I think that was the beauty of the new hardware we were working with. You'd discover little tricks and quirks which gave you ideas you wouldn't or couldn't have imagined by just planning everything out on paper. Suddenly your canvas is 3D!"

The opportunities made possible by the N64 hardware were not just exciting for those working in graphics and gameplay. Composer and sound designer Graeme Norgate had produced the audio for several SNES and Game Boy titles, including *Donkey Kong Land*, but when he joined the team working on *Blast Corps* in late-1995, he could hardly believe his ears. "All I'd heard up to that point about the audio was that it could have 100 sound channels," he remembers. "Compared to the SNES' eight channels, this was going to be party time! There was just one problem. We didn't have final hardware for the new console. In reality, although the N64 could play up to a hundred sounds at once, it wouldn't have been able to do anything else. In the end we compromised on 16… which was still twice as many as the SNES."

The dreamy, chilled-out soundtrack to *Blast Corps* was a sweet counterpoint to the tense task of destroying buildings to avoid nuclear catastrophe and was the first of several scores Graeme would produce for N64 titles, ranging from *GoldenEye 007* to *Jet Force Gemini*. He was well aware of the CD audio capabilities of the machine's main rival, the PlayStation, but argues the limitations of Nintendo's cartridge-based system actually made the Rare sound team more creative. "Take the amount of interactivity in *Conker's Bad Fur Day*," says Graeme. "I'm not sure how you could have achieved that on something like the original PlayStation. And I have to give credit to Graham Smith. He created a fully fledged music system that all subsequent Rare N64 games would use. I was able to add sounds to my Silicon Graphics Indigo2 machine and playback those instruments in real-time whilst I composed in Cubase on my PC, all thanks to his handy work and a midi cable. Without Graham, our games wouldn't have sounded anywhere near as good as they did."

It wasn't just the new technology which allowed Rare to push the boundaries of what a game could offer. Studio heads Chris and Tim Stamper were prepared to hire relatively inexperienced staff and let them explore new game styles, a policy which would reap

PERFECT DARK

This makes the list for its ambition. Play it today and it can feel painfully slow in places but that's because the team were trying to cram so much in, from night-vision goggles and bloodstains to an innovative co-op mode and customisable multiplayer options.

BLAST CORPS

Our left-field choice for this list is Rare's first N64 title. Its premise – switch between vehicles to clear a path for a runaway nuclear-missile carrier – combines action with puzzling to impressive effect. Plus it features a jetpack, a nice nod to Rare's Ultimate past.

» [Nintendo 64] *Blast Corps*: why you should always give way for a nuclear-missile carrier.

» [Nintendo 64] *Killer Instinct Gold* did a decent job of bringing the arcade experience home, even if some features and graphical fidelity had to be cut in the process.

» [Nintendo 64] If you can overlook its dated visuals, *GoldenEye* still offers a solid single-player story and much fun in multiplayer mode.

» [Nintendo N64] The option to jump into a hovercraft or plane as well as a kart helped distinguish *Diddy Kong Racing* from its rivals.

» [Nintendo 64] Rare excelled at creating memorable characters and *Banjo-Kazooie* would lead to several sequels for the unlikely pair.

LOST GAMES

THE N64 GAMES THAT WEREN'T

A number of Rare-developed N64 titles never saw the light of day, though probably the best-known of these, *Dinosaur Planet*, did evolve into *Star Fox Adventures*, Rare's only GameCube title. Before hitting the bottle and developing a potty-mouth, Conker was due to appear in *Conker's Quest* (aka *Twelve Tales: Conker 64*), a typically cute and colourful 3D platformer – perhaps a little too typical, which prompted its transformation into the unexpectedly adult-orientated *Conker's Bad Fur Day*. We already know that *Diddy Kong Racing* was initially planned as more of an adventure game set in a theme park with driving elements than the full-on kart racer it became, but right up until the year of release, the Rare team were basing the game around one of their own NES-era properties. *RC Pro-Am 64* featured three-wheeled trikes and a roster of original characters and some assets from this incarnation are still present in the final code. The most intriguing unreleased title is *Velvet Dark*, a third-person action stealth game in the mould of *Metal Gear Solid*, with Joanna Dark's oddly named sister in the lead role. Visit unseen64.net for more details, screenshots and even gameplay videos of these and many other lost games.

» A screenshot from the unreleased *Twelve Tales: Conker 64*, before booze and fags took their toll on the ginger squirrel.

great rewards. "None of the people working on the code, graphics and game design for *GoldenEye 007* had worked on a game before, and that gave it this kind of joyful naivety," says David Doak, a key member of the small team working on the seminal first-person shooter. "We were like a mini-company inside Rare, making an atypical game that no one really thought was going to be any good. The general feeling was we were a bunch of students wasting time. Then when it went into testing, there was this very good feedback, initially from testers in-house but also from Nintendo. Nintendo likes to test things to death and that's the right way to make good games."

> "WE WANTED TO DEVELOP THE STEALTH GAMEPLAY THAT GOLDENEYE HAD STARTED AND HAVE A SECOND GO AT MULTIPLAYER. WE WERE VERY CONFIDENT"
> **KARL HILTON**

***GoldenEye* turned out to be very good indeed.** It began as a side-scrolling platformer for the SNES, before project lead Martin Hollis reimagined it as a *Virtua Cop*-style on-rails shooter and then oversaw its evolution into a narrative-driven FPS with a range of missions and a split-screen multiplayer mode. "It was over ambitious but, in the end, it just about got there," says David. "If there'd been any kind of sensible control, it probably wouldn't have been allowed to be as ambitious as it was."

Cramming in so many innovative features, from dual-wielding weapons to being able to target specific body parts with telescopic sights, took time and the game was released more than two years after the film had arrived in cinemas – only just beating the next *Bond* film to the box office. Artist Karl Hilton acknowledges the role of the Stamper brothers in giving the team the opportunity, and sometimes protection, to make the game they wanted to. "Chris and Tim came over occasionally to see what we were doing but they never interfered," he says. "We had some feedback on what they felt a Rare game should be and we realised *GoldenEye* was very different from their previous games so credit to them for trusting us with it. They supported us and gave us the time and space to try things. That was very valuable for a newbie team like ours."

The brothers' faith was justly rewarded – *GoldenEye* sold over 8 million copies and garnered a slew of awards, including a quartet at the prestigious Annual Interactive Achievement Awards, held in Atlanta in 1998. Naturally, Rare saw a follow-up as a sensible move but issues around retaining the *Bond* licence meant it opted to create a lead character of its own: Joanna Dark. "*Perfect Dark* was a chance to apply what we'd learned from *GoldenEye* to a new game," says Karl. "I wanted higher-definition graphics, a faster framerate and we all wanted the chance to tell an original story. We also wanted to develop the stealth gameplay that *GoldenEye* had started and have a second go at multiplayer. We were very confident by then."

The confidence may have been a little misplaced – over half of the original *GoldenEye* team had left the company before *Perfect Dark* was finally released in 2000 – but the game showed Rare could make quality titles based on

» [Nintendo 64] *Donkey Kong 64* continued the rule that all Rare's N64 games must contain a leafy glade. And waterfalls. Lots of waterfalls.

» [Nintendo 64] Some of the humour may have aged as well as a blocked toilet but *Conker's Bad Fur Day* was a revelation on release.

» [SNES] *Donkey Kong Land III* was an excellent-looking game, especially when experienced via the Super Game Boy.

» [Nintendo 64] *Perfect Dark*'s female lead took her name from the 15th century French heroine Jeanne D'Arc. See what they did there?

» [Game Boy Color] *Perfect Dark* has superb visuals, a surprising amount of speech and a rock-hard difficulty level.

» [Nintendo 64] *Mickey's Speedway USA*: we would not want to be the ones designing helmets for these drivers.

new or old IP, something it also proved in the realm of the 3D platformer. *Banjo-Kazooie* and its sequel *Banjo-Tooie* showed Rare's aptitude for constructing huge 3D worlds around a likeable duo of its own making, with some suggesting that Rare's first game bettered *Super Mario 64*. Like Nintendo's game, it presents each level as effectively a giant sandbox to play around in and each world is filled with things to do, items to collect and characters to interact with. Originally known as Project Dream, a canned project for the SNES, Banjo evolved into one of the best platformers for the system and still retains its fans 25 years later. Its sequel *Banjo-Tooie* earned equal acclaim on release, although some noted that there was perhaps a little too much to collect in it.

Still, both games highlighted Rare's competence within the genre, while *Donkey Kong 64* reaffirmed Rare's ability to take a beloved Nintendo property in new and adventurous directions. "From my perspective, Nintendo just left us to get on with it," says artist Mark Stevenson. "They did insist on the introduction of the Expansion Pak and we were told we had to use it in ways which made the game impossible without it. I can't remember all the stuff we did, but more memory meant bigger levels and we had a dynamic light system, where we could have swinging and animating lights in the environment. *Donkey Kong 64* was the first project where we actually hired people purely to animate and we started to see more specialisation across the art teams."

As the new millennium dawned, Rare really had become king of the N64 jungle, producing eleven games during a six-year period. It had shown that first-person shooters, once the preserve of PC gamers, could work wonderfully on home consoles, proved it could handle major videogame properties, as well as establishing its own IP like *Banjo-Kazooie*, *Blast Corps* and *Jet Force Gemini*. And then of course there's *Conker's Bad Fur Day*, a tremendously ambitious platformer/adventure that once again pushed Nintendo's machine to its limits and was stuffed with pop culture references and lots of swearing. Of course, while it was pushing boundaries on Nintendo's 64-bit console, Rare continued to create a variety of games for Nintendo's handhelds as well. The technically accomplished *Donkey Kong Land III* would be Rare's last Game Boy game during this period, before it moved on to the Game Boy Color with titles like *Conker's Pocket Tales*, which also worked on an original Game Boy and would debut before its sweary bigger brother. Other releases included the incredibly ambitious *Perfect Dark* and some racing games starring Mickey Mouse. Suffice to say, Rare was a multifaceted diamond in Nintendo's crown… a jewel which was soon to be coveted by one of its main competitors…

A RARE CELEBRATION

THE MICROSOFT ERA

MICROSOFT'S DECISION TO PURCHASE RARE IN 2002 HAS PAID HUGE DIVIDENDS. WHILE THE STUDIO WAS ENJOYING FRESH SUCCESS WITH ITS MONKEY ISLAND DLC FOR SEA OF THIEVES, WE WERE LUCKY ENOUGH TO CATCH UP WITH A NUMBER OF RARE VETERANS TO NAVIGATE THROUGH THE LONGEST AND MOST VARIED CHAPTER OF THE STUDIO'S LIFE

CRAIG DUNCAN

LOUISE O'CONNOR

JAMES 'JT' THOMAS

MIKE CHAPMAN

Nowadays, acquisitions of big developers seems like a regular occurrence, whether it's Microsoft buying Activision for $68.7 billion or Sony buying Bungie for $3.6 billion. In comparison, Microsoft's purchase of Rare in 2002 for $365 million ($613 million in today's money) almost seems quaint, but it was a massive deal at the time that sent shock waves through the games industry, as Craig Duncan, Rare's current studio head, recalls. "I wasn't at Rare at the time, I was actually running some projects for Codemasters," he says. "But to me, it was a big statement of intent about Xbox and Microsoft. Like it was, OK, you're going to acquire one of the most-renowned, well-respected developers in the industry. Just to do that was a bold move. I think it made the whole industry go, 'Wow, Xbox and Microsoft are serious about games.'"

James 'JT' Thomas, the associate tech director on *Sea Of Thieves*, started at the studio the summer before the acquisition. "I was very surprised because when I first rocked up to Twycross on my first day, I was expecting GameCube dev kits, like Nintendo everywhere," he says. "I rocked up and there was an Xbox dev kit as well on my desk. There were all the test kits and the dev kits there as we were trying to get used to the Xbox technology. I was properly blown away because it was so top secret."

Louise O'Connor is another Rare veteran who has been at the studio for 24 years. Currently the executive producer on Rare's new project *Everwild*, she recalls the work that went into the video showcasing Microsoft's bold announcement. "I remember at the time being really excited to have Conker come out and chainsaw the Xbox logo in the announcement video," she recalls. "Conker comes out and he turns it into the Rare logo and then Kameo comes along and Banjo is there as well. I remember being part of creating the little assets that we were going to use to tell everybody, tell the world about this huge acquisition, because like you say, it was a huge moment, not just for us, but for the games industry."

The announcement caused a huge stir both good and bad, with some gamers upset about the move away from Nintendo, and others relishing the thought of playing Rare games on their new Xbox console. In hindsight it proved to be a canny move, while the Xbox excelled at first-person shooters and driving games (something Rare had a legacy with) it was lacking in other areas, particularly platformers. "What we were bringing with us was that lovely diversity and catalogue of games and developers who create brand-new things and stretch ourselves as developers," Louise continues. "So yeah, it was cool to be part of that." ▶

» (From left to right) Louise O'Connor, Craig Duncan, Mike Chapman, James 'JT' Thomas and Christina McGrath discuss Rare's last 21 years with Darran.

» [GameCube] While scores might not have been exceptional for *Star Fox Adventures*, we still feel it remains one of the best-looking games on Nintendo's console.

> "THERE WERE ALL THE DEV KITS AS WE WERE TRYING TO GET USED TO THE XBOX TECHNOLOGY. I WAS PROPERLY BLOWN AWAY BECAUSE IT WAS SO TOP SECRET"
>
> **JAMES 'JT' THOMAS**

» Rare has won a number of BAFTAs over the years and they're all proudly on display.

RARE GEMS

DON'T MISS THESE CLASSICS FROM THE MICROSOFT YEARS

VIVA PIÑATA

So sugary sweet it should come with a government health warning, *Viva Piñata* is a sensational slice of Rare that everyone should experience. With a timeless art style and some staggeringly deep gameplay, Rare's game boasts a lot of complexity beneath its cheerful exterior. Its Xbox 360 and DS sequels are worthy of your time as well.

GRABBED BY THE GHOULIES

Creatively impressive and bursting with humour, *Grabbed By The Ghoulies* simply doesn't get the credit it deserves. Its combat may be a little basic for hardcore gamers, but Rare's game is bursting with charm, is incredibly funny and has some great-looking bosses. It's also filled with secrets hinting back to the Ultimate days.

BANJO-KAZOOIE: NUTS & BOLTS

It might not have been the game that fans expected, but *Nuts & Bolts* proved that Rare's lovable bear had lost none of his magic. The creation aspect of the game might not have been to everyone's tastes, but it offered an exciting spin on the series that's since been adopted by many other games.

BANJO-KAZOOIE: GRUNTY'S REVENGE

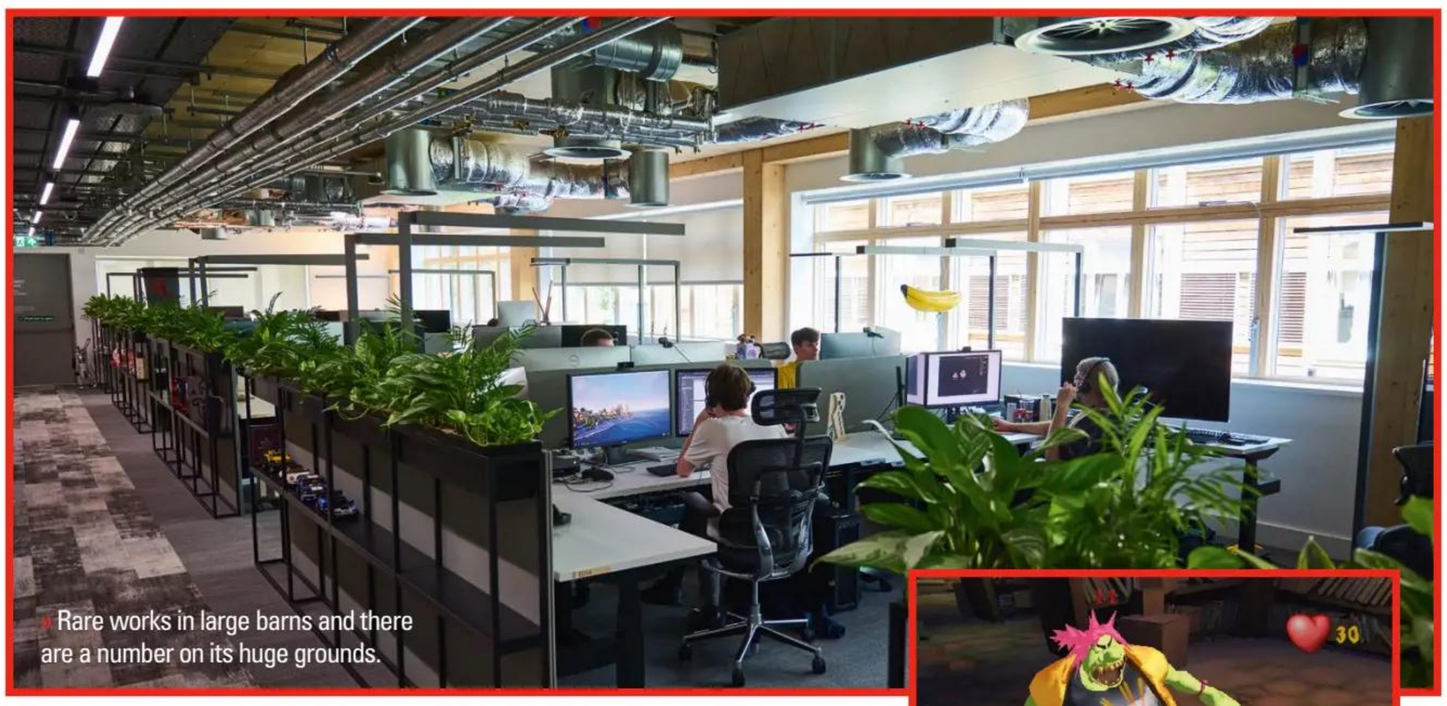
Rare released several games across Nintendo's Game Boy Advance, but our favourite remains Banjo and Kazooie's only portable adventure. Set between the two N64 games, it's a cracking isometric adventure with great visuals, solid mechanics and plenty of humour. It may be short, but it's very, very sweet.

SEA OF THIEVES

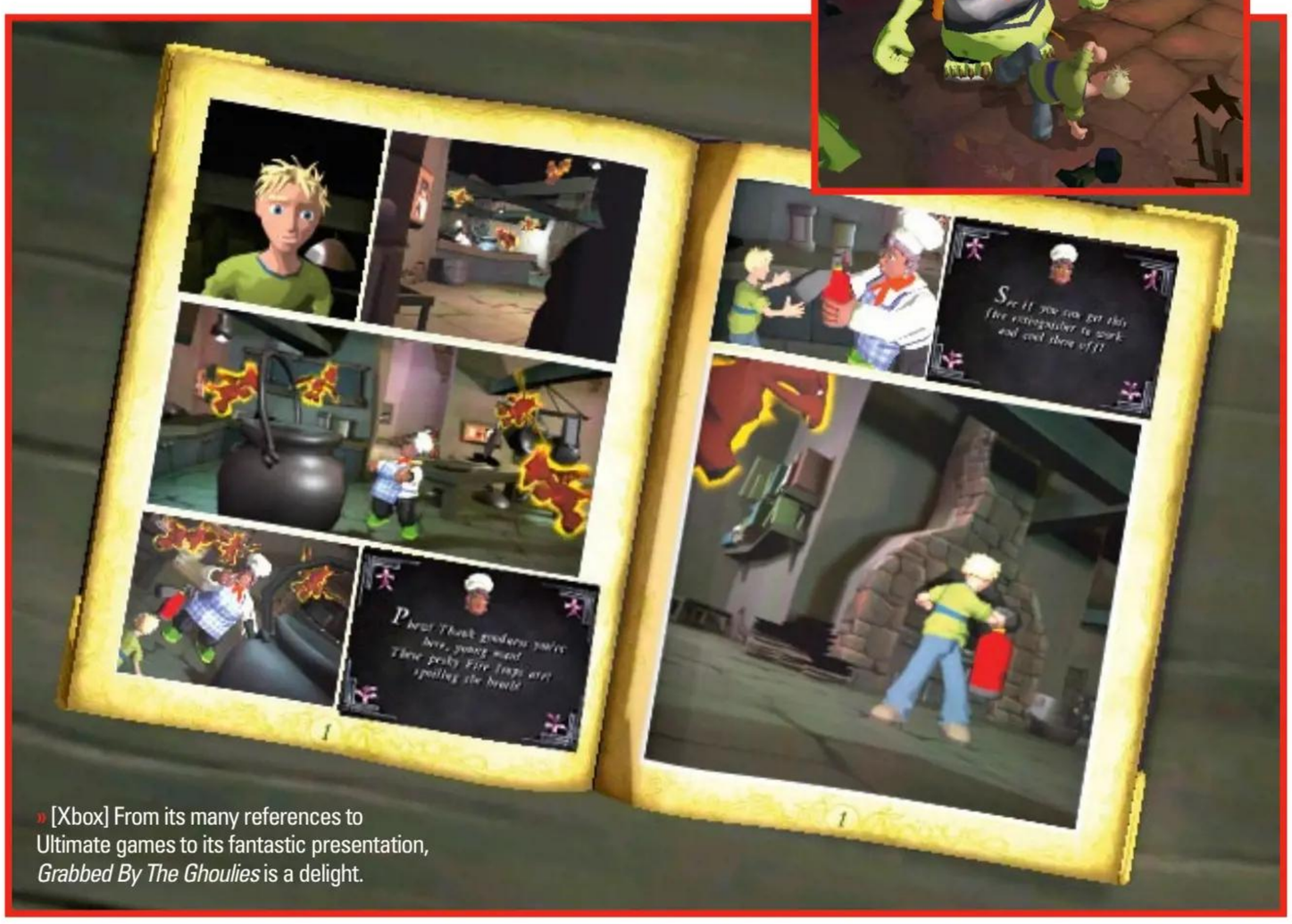
Rare's latest game continues to evolve and has turned into a gargantuan adventure over the last five years that lets anyone live out their best pirate dreams. It has recently been bolstered by an excellent free piece of DLC set in the world of *Monkey Island*, which is an absolute delight to explore.

» [Game Boy Advance] *Banjo-Kazooie: Grunty's Revenge* may be easy but it's still a charming little adventure.

» [Game Boy Advance] All three *Donkey Kong Country* games ended up being ported to Nintendo's handheld by Rare.



» Rare works in large barns and there are a number on its huge grounds.



» [Xbox] From its many references to Ultimate games to its fantastic presentation, *Grabbed By The Ghoulies* is a delight.

LOST GAMES

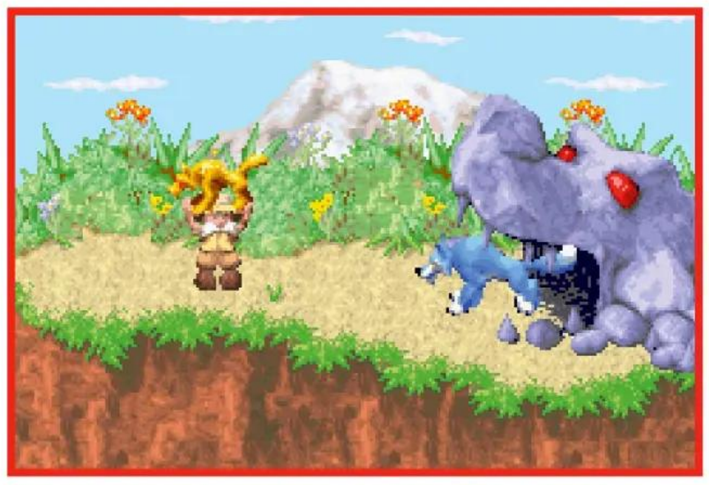
WHAT DISAPPEARED AT MICROSOFT?

A shroud of secrecy has surrounded Rare's games ever since *Mire Mare*, so it's no surprise to learn that there are plenty of lost prototypes and cancelled projects from the studio's last 21 years. Arguably its most famous from this period is the remake of *GoldenEye 007*, which was planned for Xbox Live Arcade but never arrived. It has since leaked online, while a new remaster of Rare's iconic game is finally available on Xbox and Switch.

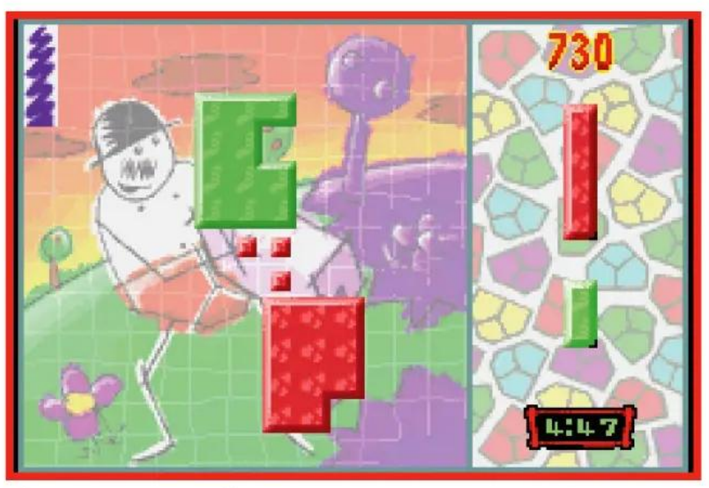
Although it was only a prototype, we've always been fascinated by *Savannah*, which tasked you with rearing a lion cub and may have possibly been planned for Kinect. *Kameo* and *Perfect Dark* sequels were also planned for Xbox 360 at one point, but never materialised.

Other Rare games got lost in the transition from Nintendo to Microsoft, including *Donkey Kong Racing* (which transformed into *Sabreman Stampede*, which was also cancelled) as well as *Donkey Kong: Coconut Crackers*, which morphed into *It's Mr Pants*. You'll find plenty more hidden gems from this period in video form on *Rare Replay*, but you'll need skills to unlock them.

One thing that's easy to forget in those early Microsoft-owned days is that while Rare was no longer associated with Nintendo, it was still making games for Nintendo's systems. Ports of its three *Donkey Kong Country* games appeared on the Game Boy Advance from 2002 to 2005, along with an interesting *Sabre Wulf* update, the bizarre puzzle game *It's Mr Pants*, two *Banjo* games and even some later DS releases: *Diddy Kong Racing DS* and *Viva Piñata: Pocket Paradise*. They might not have always been high-scoring titles, but they highlighted Rare's commitment to Nintendo's platforms. "Although Microsoft came in and took us under their wing, the Game Boy Advance and DS development never stopped," clarifies JT. "There was an agreement going on, but also the creativity and the output meant these were games that were best-suited on this platform, which is why it carried on for so long. *It's Mr Pants* is obviously a classic, but I couldn't see that working on a full-blown console, but as a handheld puzzler it's absolutely perfect."



» [Game Boy Advance] *Sabre Wulf*'s sequel was massively different to its predecessor, but still shared elements with the 1984 original.



» [Game Boy Advance] *It's Mr Pants* is a quirky little puzzle game that features all the humour you'd expect from Rare.

While Rare's handheld output was consistent during this period, it could be argued that many were more excited about its Xbox games. With Microsoft making such a big fuss of Rare's acquisition, it's perhaps surprising that the studio only released two games for the Xbox: *Grabbed By The Ghoulies* and *Conker: Live & Reloaded*. It's important to remember though that this was a big transitional period for the company – after all, GameCube dev kits were still readily available and it was cranking out GBA games. Despite working across very different consoles, JT recalls the transition being straightforward. "I started an engine back in the day as everyone did from the software side," he says. "So we had the Dolphin dev kits and the Xbox dev kits almost running side by side because we were shipping *Star Fox* still at that point. It was a relatively easy transition from our point of view, because I think the engine folks would make sure everything would basically transition smoothly for most of the game teams." *Grabbed By The Ghoulies* debuted in October 2003, roughly

> "NOBODY KNEW THAT WE WERE THE DEV TEAM. AND I REMEMBER IT BECAUSE I WAS IN AWE OF HOW GOOD THEY WERE AT IT STRAIGHT AWAY. THEY KICKED OUR ASS!"
> **LOUISE O'CONNOR**

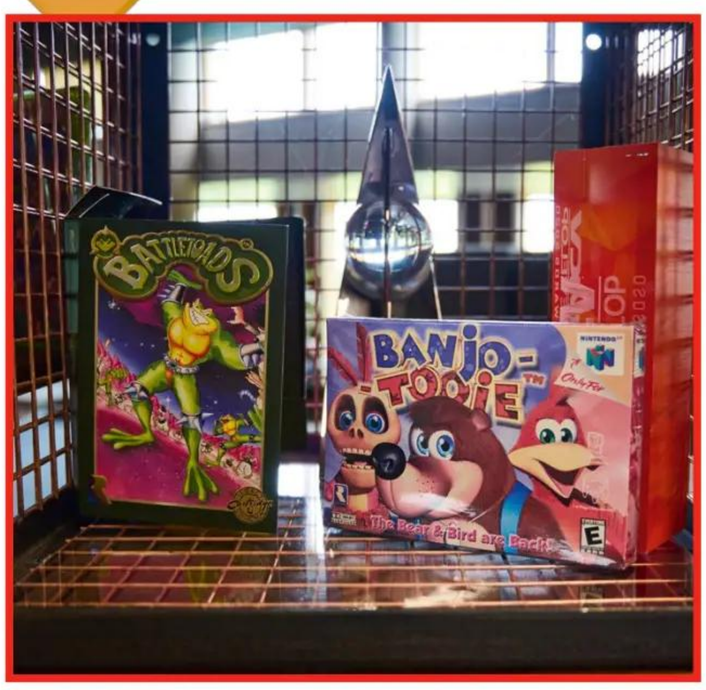
a year after *Star Fox Adventures* and while it opened to extremely mixed reviews, we feel it's a highly entertaining game, packed with Rare idiosyncrasies and nods back to its earlier Ultimate games. Designed by longtime Rare stalwart Gregg Mayles it's a classic that's crying out for a Making Of feature (if you're reading this, Gregg, call us). And then of course there was *Conker: Live & Reloaded*, which debuted in 2005. Easily one of the best remakes of the era, it drew acclaim at the time due to its fidelity and extensive online multiplayer options. It also meant that for the first time, its development team could directly interact with the fans enjoying its games. "I remember the day that we launched, the team was in the barn and we jumped into a game," Louise says. "Nobody knew that we were the dev team. And I remember it because I was in awe of how good they were at it straight away. They kicked our ass! I remember us all just standing around watching and jumping in and playing with players, so that was the first time that we'd ever been able to do that."

Less than six months after *Conker* made its sweary debut, Microsoft's new console launched and Rare was ready with two games:

» [Xbox] *Conker: Live & Reloaded* did a great job of showcasing the Xbox's graphical grunt and its online capabilities.

Perfect Dark Zero, a solid-enough sequel to its acclaimed N64 hit and *Kameo: Elements Of Power*, an inventive adventure game, which, like 2006's *Viva Piñata*, had spent some time as an Xbox release. There's a history of these transitions across consoles at Rare of course, *Dinosaur Planet* on the N64 transformed into *Star Fox Adventures*, while *Kameo* originally started life on GameCube. Craig says that these moves can happen for many reasons. "Sometimes ideas need different hardware and technology to make them come to life. Like sometimes your idea is bigger than the capability you're trying to put it into," he says. "So you think about *Kameo*, think about those massive battle scenes with all the orcs. I remember seeing that for the first time on an Xbox 360. And it's just popping my brain. That's just something that just wouldn't have been able to be done on previous hardware.

» Here's a neat transition showing the different stages of *Kameo: Elements Of Power*'s development across Gamecube (far left) Xbox (middle) and finally, Xbox 360 (right).



» Rare's old games are proudly on display when you visit the studio. Darran instantly clocked that sealed *Banjo-Tooie*.

» [Xbox 360] *Jetpac Refuelled* was a fantastic update to Ultimate's first game. It's just a shame we never got to see any others.

» [Xbox 360] The courtship dances in *Viva Piñata* are amazing to witness. Each animal has its own distinctive dance and music.

> "AS A DEVELOPER, THERE'S ALWAYS IDEAS THAT NEED TECHNOLOGY TO CATCH UP. AND THEN SOMETIMES THERE'S TECHNOLOGY THAT UNLOCKS IDEAS"
> **CRAIG DUNCAN**

» [Xbox 360] It's arguably not as good as its N64 predecessor, but *Perfect Dark Zero* still scored (and sold) well on release.

So as you think about things, as a developer, there's always ideas that need technology to catch up. And then sometimes there's technology that unlocks ideas, and that process is just fascinating, always has been."

It's a view that's also shared by Mike Chapman who is *Sea Of Thieves*' creative director and has worked at Rare for nearly 11 years. "I think when you're working with creative projects, and you've already put several years of heart and craft into it, you want to ensure that it connects with people in the right way," he offers. "And sometimes those ideas, they just need longer in the oven to reach their full fruition. I think the last thing you're going to do as a development team is to cut short and not take advantage of a new opportunity."

And the Xbox 360 certainly offered Rare opportunities. While *Perfect Dark Zero* and *Kameo* were well-received games, it's perhaps the aforementioned *Viva Piñata* which best highlights Rare's creativity and ingenuity. It's a delightful gardening/life simulator bursting with ideas and boasting a phenomenal art style that still holds up today. It's also vindication perhaps against those who suggested that the studio's best days were behind it due to staff leaving to form studios like Free Radical Design before the acquisition.

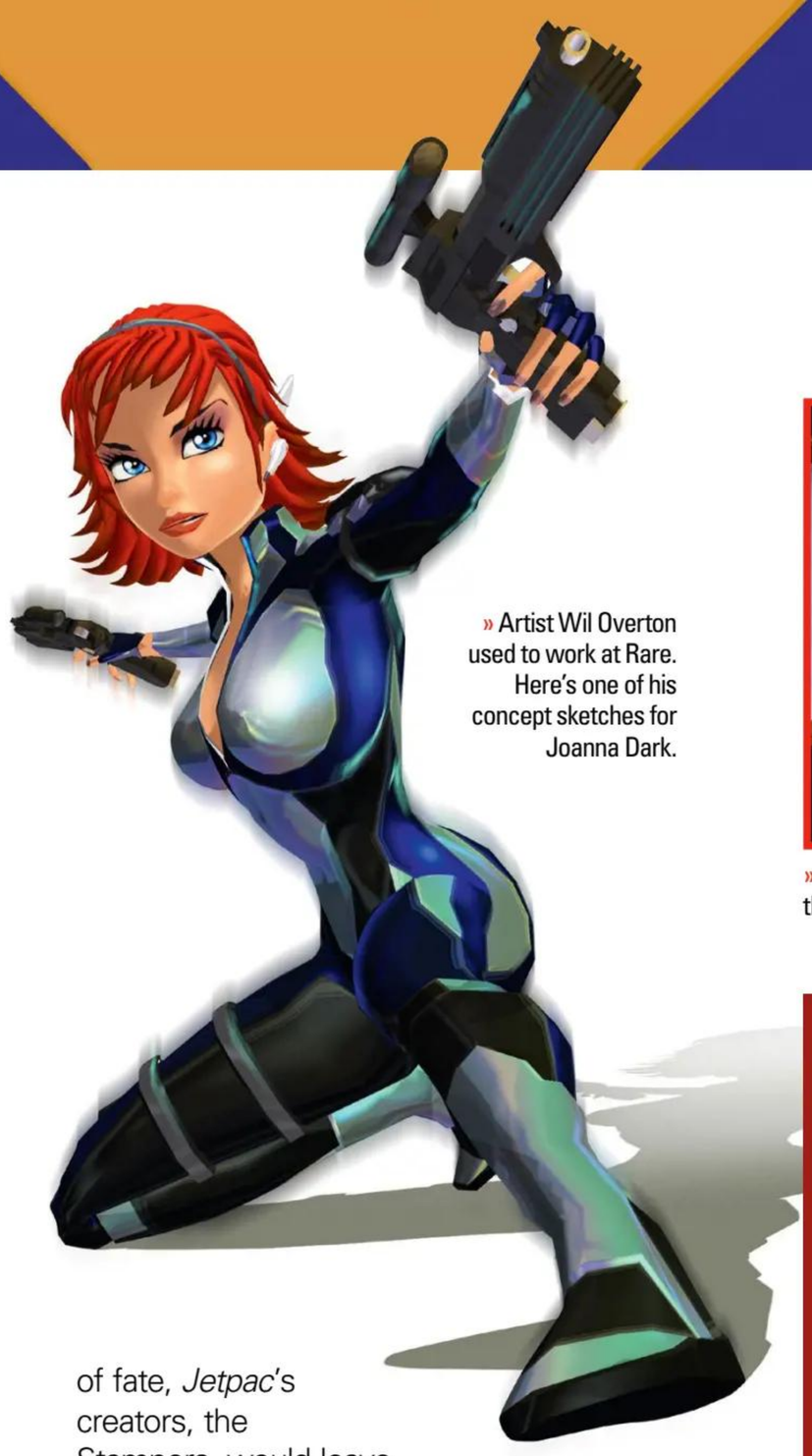
We also need to mention *Banjo-Kazooie: Nuts & Bolts*, which upset some people at the time due to its focus on crafting vehicles to explore its large worlds, but proved to be surprisingly prescient when you look at the many crafting games that followed in its furry wake. The internet might gush about the vehicle creation of Nintendo's *Tears Of The Kingdom*, but Rare did the same thing 15 years earlier. It's a Rare game JT wishes he had worked on as he recalls the developers having a lot of fun making it. "There was a time I walked in on a Friday afternoon and they were racing letters of the alphabet to find out which ones were quickest," he recalls. "It was so far ahead of its time and I replayed it again during lockdown."

While Mike wasn't at Rare at the time, the studio's output during this period wasn't lost on him. "I think about the diversity and how amazing the 360 generation was," he says. "I'm thinking about how we launched *Kameo* and *Perfect Dark Zero* and *Viva Piñata* a little bit later on and just how different those core experiences are. You've a first-person shooter, cerebral puzzle solving, all the optional objectives that came in co-op mode to show off multiplayer on Xbox Live. Then there's *Kameo*, a beautiful third-person adventure. They're so different. But the spirit is the same of being bold in completely different genres."

As well as creating cutting-edge new games, the Xbox 360 also saw Rare embracing its heritage. *Jetpac Refuelled* dropped in 2007 (in an ironic twist

» [Xbox 360] Craig feels *Kameo*'s gigantic battles would have been impossible to achieve on Microsoft's Xbox.

» [Xbox 360] It may look incredibly cute, but there's a fierce food chain in *Viva Piñata* that needs to be kept in check if you want your garden to thrive. Oh, and if you're interested, Leafos (left) is voiced by Louise.



» Artist Wil Overton used to work at Rare. Here's one of his concept sketches for Joanna Dark.

of fate, *Jetpac*'s creators, the Stampers, would leave Rare that same year), while Rare worked with the Dundee-based 4J Studios to bring back *Banjo-Kazooie*, *Banjo-Tooie* and *Perfect Dark* to Xbox Live Arcade. "I know Paddy [Burns] and the team up at 4J, they're good people," says Craig about how the remasters came about. "I'd actually worked with them previously on a couple of other projects before joining Rare. I think when you work with any developer, there's always trust and you need to build that out. I think they were fans of the IP, which helped and they were obviously a great engineering team. We enjoyed working with them and they've done a bunch of stuff for *Minecraft* since then."

Porting these classic games served another important purpose for the team, something that would eventually turn into *Rare Replay* (see The Ultimate Compilation). "It was the first time we also started talking about software preservation as well," confirms Craig. "So if you think about things like both the *Banjo* games and the original *Perfect Dark* coming back on Xbox Live, they're there as digital games for future generations. We also had *Jetpac Refuelled* which had an original version of *Jetpac* on it. So it was starting to kind of blur the lines between which games existed on which platforms."

The Xbox 360 was also significant for Rare for another reason. Microsoft was aggressively pushing Kinect, its new motion-controlled peripheral that would prove to be a surprising success, shifting over 35 million units (even if it did fail to live up to the hype promised in its original reveal). Rare was also involved, and while this move away from 'traditional'

» Here's Rare's sound studio. *Rare Replay*'s theme song was sung in that adjoining room.

» [Xbox 360] *Tears Of The Kingdom* may have impressed with its vehicle creation, but *Banjo-Kazooie: Nuts & Bolts* did it 15 years earlier.

FOSTERING A COMMUNITY

WE CHAT TO CHRISTINA MCGRATH, HEAD OF COMMUNITY AND COMMUNICATIONS AT RARE

When we were casually asking the team about their favourite Rare games, Christina McGrath, who has now worked at Rare for four years, was quick to point out Rare's passionate fanbase. "Everyone holds a piece of Rare so closely and dearly in their hearts," she begins. "I think, certainly for our audiences now, it's such a formative part of them growing up that it's not just a game, it's part of their culture, how they grew up, their lifestyle, those formative years – it means so much more than just a piece of media they once consumed. It's buried right deep in there."

Christina and her team have built up quite the community for games like *Sea Of Thieves* and while she's proud of the community she's built up with Rare's fanbase, she's equally proud of the community spirit found within Rare itself. "Ideas come from everywhere," she tells us. "Like people who aren't game designers. We use this term internally called 'fuzzy boundaries' where I can have an idea and take it to a designer and go, 'What do you think about this?' And then it's made. Historically, teams like mine are mouthpieces, but we're not anymore, we're a fundamental part of bringing a game to life in new and exciting ways."

Christina is proud of Rare's legacy, but like the rest of the team at Rare, she's also focussed on the studio's future. "It's exactly why I'm here," she says. "We are leaping and bounding on to the next thing and it looks completely different to what we did before. We're not just iterating on something previous. There's no job like it to actually come into work and know that you're gonna be working on something that's not been worked on before. And, you know, the challenge is, how do we take to market something that people don't even understand? Because it's such a new concept? And that it's super exciting? I think Rare have always done that."

» Christina and the community team have been an integral part of *Sea Of Thieves*' success

» [Xbox 360] Some gamers may have wanted more 'traditional' games from Rare, but the *Kinect Sports* games were still good fun and technically accomplished.

» The spirit of Rare extends beyond its walls. Several Rare members left and formed Playtonic Games in 2014. The studio's first game, *Yooka-Laylee* was a spiritual successor to *Banjo-Kazooie*.

THE ULTIMATE COMPILATION

HOW RARE CREATED RARE REPLAY

If you're a fan of Rare, odds are you own *Rare Replay*, a staggeringly good compilation designed by the studio to celebrate its first 30 years. Before the release of Digital Eclipse's *Atari 50: The Anniversary Celebration*, we considered it the definitive retro compilation awarding it 10/10 in issue 146.

But how did *Rare Replay* come about? "I've always been a bit of a Rare history buff, but I'm not an expert by any means," JT says. "After *Kinect Sports Rivals* was released but before *Rare Replay* was announced I started going around the building and collecting what I now refer to as the Rare Archives, because there were so many different bits of history in different corners of the barns. We'd come off *Kinect Sports Rivals* and were figuring out what to do next, but I got the OK from my manager to collect all this stuff together."

Teaming up with Nick Burton, JT spent several months gathering everything up, including memorabilia and back-ups of older Rare games. The next step of the project came when Craig visited Microsoft. "They presented backwards compatibility to us which was pretty cool," he recalls. "We were coming up to Rare's 30th anniversary, so you've then got this Venn Diagram of the right idea, right team and right opportunity." Rare soon realised that Microsoft's secret backwards compatibility program would be perfect for its Xbox 360 games, and JT had already been through Rare's earlier games, so a decision was made to create the collection, then cleverly known as *Pearl*. "I was well impressed that I'd called it the *Pearl Jam*, but nobody got it because they were all too young," says Louise.

The stars aligned further when a college at Microsoft approached Rare about a project they had been working on. "Someone had written a Spectrum emulator and asked for our permission," continues Craig. "We can't say what they did because it's a bit secret." "Was it Bill Gates?" we asked. "It wasn't [everyone laughs] but they'd asked us for permission to use the Ultimate games for this emulator they'd written on Windows 5 or something like that. So you've just got all these pieces and we're thinking, 'Could you put all of that into a game team?' And JT kind of became the core of that team."

That left the final game selection of 30 games and JT drafted in Rare veterans like Huw Ward and Paul Machacek to help. "We wanted to try and get a mix of history across the platforms, but on a very practical level not do too many platforms, because we wanted to make sure we could actually achieve it," says JT. "We effectively had *Top Trump* cards printed of every Rare game that we could record and they were all up on the board and we tried to do a Fantasy Football draft so that everyone had their own different 30. We could have picked some of the licensed things like the game shows from America, but actually the more interesting ones were the ones that were made and developed and spawned at Rare, like *Conker's*, like *Ghoulies*, like *Viva Piñata* and all the Ultimate ones. It was a whirlwind process." The end result is an incredible insight into one of the UK's longest-running developers. It's also exceptionally cheap to own nowadays, so make sure you give it a try.

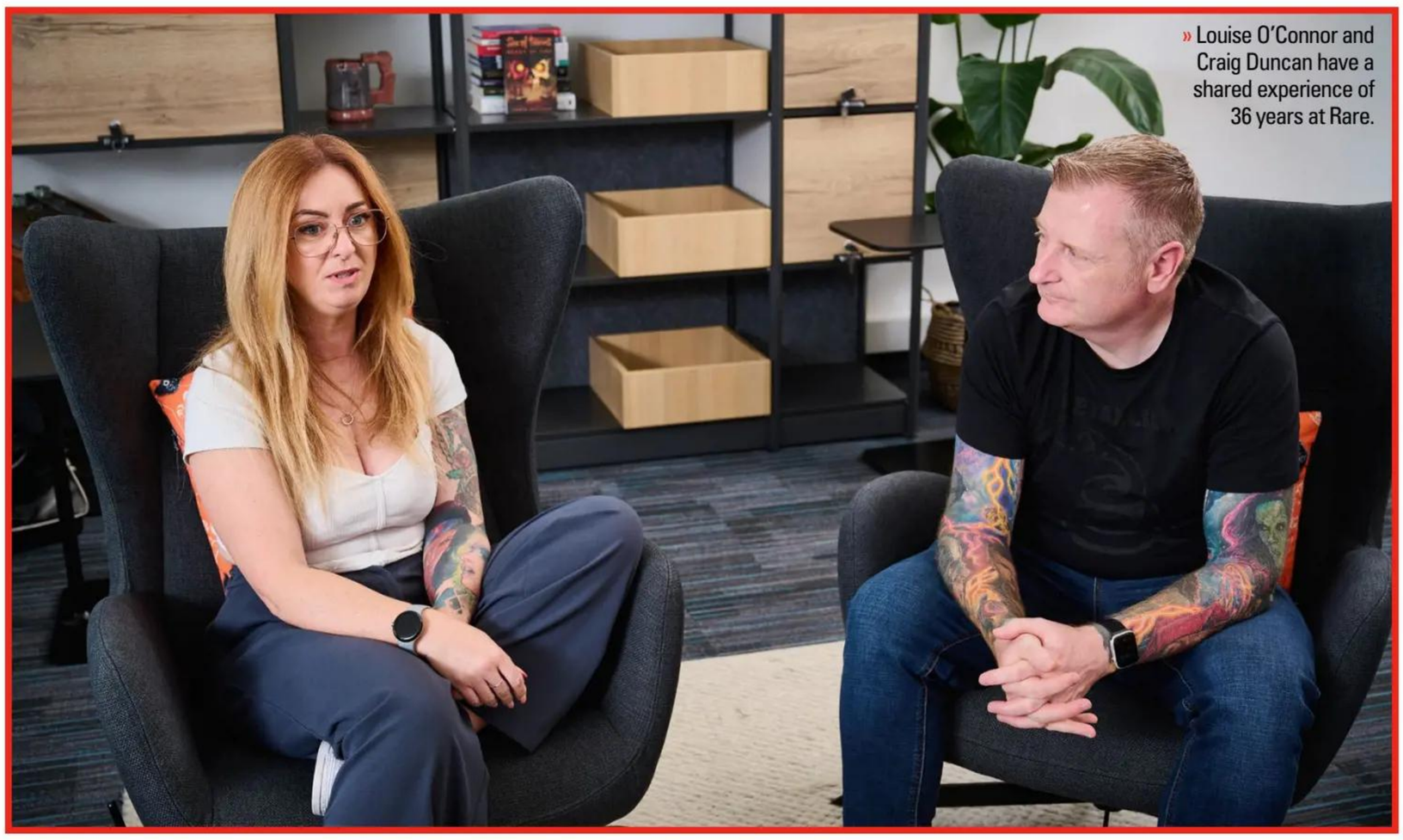
games did upset some fans, it's something that JT relished. "Every game I've worked on there's a new challenge," he explains. "With *Ghoulies* it was AI, with *Piñata* it was networking. When it came to Kinect Sports you had to rethink how everything worked. So there was this fantastic period of experimentation, especially within engineering and design, where you're trying to figure all that out." Like *Wii Sports* before it, *Kinect Sports* proved a big success, crossing over to places Rare didn't expect. "We've bumped into fans at events who would tell us, 'That was the game I played with my kids,'" recalls Craig. "I remember we got a letter from an old folk's home saying they used to play bowling. That's just cool."

The Kinect series is also memorable for Mike, but for different reasons. "It was the first game I worked on coming to Rare," he says. "Obviously games and technology coming together, Kinect was a perfect example of that. That atmosphere at the time, the excitement of the team, the fun of playing the sports and really trying to push the technology to its limits. I think, relating it to *Sea Of Thieves*, something that I feel quite passionately about, is the way that Kinect is less about tried-and-tested methods, the way people interact with it, but very much on the psychology of, how are people going to approach this? How are they going to experience it? I genuinely feel *Sea Of Thieves* is the game it is because we had those experiences on Kinect."

As Rare and Microsoft moved across to the Xbox One, Rare's work behind the scenes on Kinect and Microsoft's Avatar service, which had debuted on the Xbox 360, continued. "The

» [Xbox One] *Sea Of Thieves* has constantly evolved since its release in 2018. Learn more about its creation at bit.ly/rarepirates

» [Xbox One] *The Legend Of Monkey Island* is the latest content for *Sea Of Thieves* and will be told across three Tales.



» Louise O'Connor and Craig Duncan have a shared experience of 36 years at Rare.

» [Nintendo DS] The technically amazing *Viva Piñata: Pocket Paradise* saw the series, once planned for Microsoft's Pocket PC, return to its original handheld roots.

nice part about that is it felt like Microsoft trusted us with doing more than [games]," says JT. "So you're making *Piñata*, you're making *Banjo: Nuts & Bolts*, you're making what I guess was effectively the early days of *Kinect Sports* and other motion games at the time. But it's like [Microsoft was saying], 'We want your fun and branding and playfulness to go into the Avatar Maker as well.' It would be so easy, I guess, to just make a menu, and just be done with it all. But [it helped] having engineers that would also work on games understanding how the Avatarring works and animators who had worked on games understanding how to make it playful. At the same time they were asking us to do things like the achievement noise as well."

> "THIS IS A STUDIO FULL OF IDEAS. WE DON'T FEEL LIKE WE'VE MADE EVERYTHING YET THAT NEEDS TO BE MADE, THAT NEEDS TO EXIST IN THE WORLD"
> **LOUISE O'CONNOR**

Although the Xbox One saw the return of both *Killer Instinct* (with Rare offering support to Double Helix Games and later Iron Galaxy) and *Battletoads* (Rare this time offering assistance to Dlala Studios) they're not seen as traditional Rare games. Rare's own notable releases on Xbox One during this period were the aforementioned *Rare Replay* which debuted in 2015 and *Sea Of Thieves*, which sailed onto Games Pass in 2018 and still has strong (sea) legs today. We were interested to know if the Live Service route was something Rare would pursue with its later games. "My personal opinion on that is that Live Service is a word that we hear quite a lot," says Mike. "The way we've always thought about it, is that *Sea Of Thieves* is about all those childhood dreams of pirate adventures. Rare and pirates have always had that relationship. There's been references to pirates in various older games, so there's that idea of a world you could escape into, the spirit of adventure. But when you think about the service part it's more the fact that the world exists even when you're not playing. And that's quite a big difference, it's always there. It's changing, it's evolving, new players are joining, whether you're playing or not. It feels like a real world you can escape into. I think service and updating the game in that evolving way just fit the type of game that *Sea Of Thieves* was. And it goes back to that point of creative opportunity. How can you go into a new space and do something really interesting that maybe we haven't done before as a studio?"

During the Ultimate and Nintendo years, Rare was infamous for its intense secrecy, with even its own staff squirrelled away in the studio's cavernous barns working on secret projects, but times change and as the studio evolved under Microsoft and delivered new projects like *Sea Of Thieves*, Rare's culture changed too. Mike mentions the need to get a dedicated community team, which would help lift the curtain (not entirely) on the once-secretive studio. "Those days of being Willy Wonka's Chocolate Factory, secretive and nobody knows what's happening behind the gates of Rare weren't working, we actually need to go and have a dialogue, an actual relationship with our players," he says. "So it wasn't just the core gameplay. It was how we wanted to create that game, how we wanted to create a community that stays with us and goes on that journey."

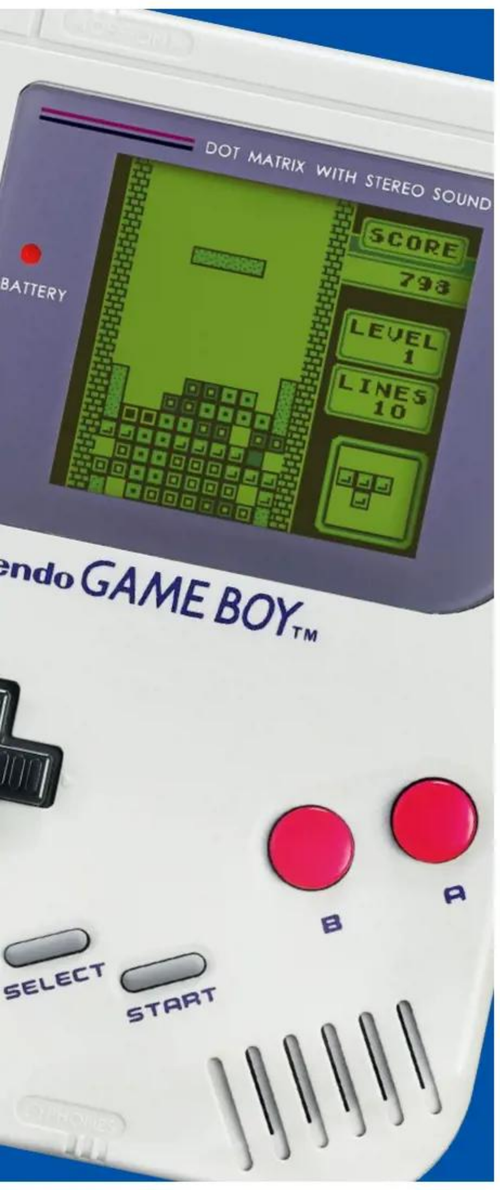
And *Sea Of Thieves* has been a huge success for Rare, attracting over 30 million players. It seems that everyone loves to play as a pirate and a selection of cleverly crafted DLC and crossovers with popular Microsoft franchises like *Halo* and *Gears Of War* have kept interest in the game high. And that's without considering free expansions like *A Pirate's Life*, based on Disney's *Pirates Of The Caribbean* and the recently released *The Legend of Monkey Island*. It's been particularly rewarding for Mike, who has dedicated a large amount of his career at Rare to the game. "It's been wonderful to see," he says. "I've been working on it for almost nine years now, from initial prototype to initial release, to where we are today. The audience has grown up with us."

Rare may be a very different studio to when the Stampers first launched Ultimate in 1982, but that fusion of great gameplay and bleeding-edge technology that became synonymous with Ultimate's games can still be seen today, as it can be seen through every era of the studio's existence. And yes, it would be easy for Rare to rest on its laurels, but judging by the incoming *Everwild*, that doesn't look like it's going to be happening any time soon. "This is a studio full of ideas," Louise proudly says. "We don't feel like we've made everything yet that needs to be made, that needs to exist in the world. We have a whole heap of new experiences that we want to give. It just feels like a wasted opportunity to revisit and redo things that we've already done, when we are full to the brim of new experiences that we want to bring to the world." It sounds like genuinely exciting times are ahead for Rare, but we still wouldn't say no to a new *Sabre Wulf* adventure… ✱

NINTENDO'S ICONIC HARDWARE INNOVATIONS

FOR DECADES, NINTENDO HAS CONSTANTLY SOUGHT TO RESHAPE THE POSSIBILITIES OF VIDEOGAMES AND EVEN THE WAYS IN WHICH WE INTERACT WITH THEM. JOIN US FOR A LOOK BACK AT NINTENDO'S TECHNOLOGICAL ADVANCES, AND THE HIGHS AND LOWS THAT CAME WITH THEM

WORDS BY NICK THORPE



NINTENDO'S ICONIC HARDWARE INNOVATIONS

Whether or not you're a fan of Nintendo's products, it's impossible to deny its influence on the design of home videogames.

Time and again, the company has introduced new design concepts that have become commonplace – and just as frequently, it has popularised technologies that had previously been tried to no avail. Thanks to its lengthy tenure in the business, it's arguable that Nintendo has done more to push the videogame console forward than any other manufacturer.

Prior to its transformation into the company we know today, Nintendo was making toys like the Ultra Hand and arcade games such as *EVR Race*. Key employees including Genyo Takeda, Masayuki Uemura and Gunpei Yokoi were hired in this era, and they carried the inventive nature required for those industries with them as Nintendo started exploring videogames. Since Nintendo initially lacked experience with electronics, its first home consoles, the Color TV Game line, were co-created with Mitsubishi. In 1980, the Game & Watch range of dedicated handheld LCD games was introduced, and in 1981 a Game & Watch adaptation of Nintendo's wildly popular arcade game *Donkey Kong* was created. In order to fit the four-way movement of the arcade game into a clamshell body, the cross-shaped directional pad was invented to replace the joystick.

Success with arcade and handheld games led to the development of the Famicom, launched in 1983. Arguably the greatest hardware legacy of the console is its controller, which incorporated the d-pad and became the template others followed – the basic shape and layout were still being borrowed by competitors as late as the Amstrad GX4000 in 1990. That layout followed to international markets with the NES in 1985, now without the hardwired design and microphone on the second controller. The NES also included the 10NES chip – a protection measure designed to block unauthorised software from running on the console, as well as provide region locking. This wasn't so popular with players, but Nintendo felt the innovation necessary to protect its business model in the wake of the North American videogame market crash of 1983.

Nintendo soon started to experiment with alternative game distribution methods with the introduction of the Famicom Disk System. As well as storing more than the typical cartridges of the time, the floppy disks offered space for save data and could be rewritten with new games at special kiosks, for a lower price. Another innovation, battery-backed save RAM, solved the problem of saving when games like *The Legend Of Zelda* were converted to cartridge format for the NES. The add-on was moderately successful, prompting a variety of similar initiatives over the years, including the Japan-only rewritable Nintendo Power flash cartridges for the SNES and Game Boy, and the ill-fated 64DD add-on for the N64.

» The Famicom's second controller had a microphone instead of Start and Select buttons.

What ultimately rendered the Famicom Disk System obsolete, apart from a piracy problem, was chips known as Memory Management Controllers (commonly called 'mappers') that allowed for bank-switching and extra features. Enhancement chips had been used in game cartridges before, like *Pitfall II* on the Atari 2600, but these became commonplace on the Famicom and NES. "They could change them for the specific game, which was really really useful," says Alastair Low, developer of NES games *Flea!* and *Tapeworm Disco Puzzle*. These allowed the 8-bit consoles to be pushed past their theoretical limits and remain relevant throughout the Eighties and into the early Nineties, leading to sales of almost 62 million consoles globally.

Today, Nintendo is well known for its attempts to choose the most appropriate hardware, rather than the most powerful. A great early example of that was the Game Boy. The point has often been made that the hardware was less advanced than that found in the Lynx and the Game Gear, and consequently cheaper and less power-hungry, but it's often forgotten that it was still an impressive machine in its own right. Writing in *Computer & Video Games* issue 93, Jaz Rignall said that "the Game Boy makes previous handheld games look Neanderthal by comparison" with "amazingly sharp graphics" and "glorious stereo" sound.

Still, those comparisons with other handheld consoles were unavoidable. "With the Lynx, I think the software ultimately was an issue for it. But the Game Gear didn't suffer with that, it actually had some phenomenal

» The first Nintendo home consoles were the dedicated Color TV Game units, manufactured by Mitsubishi.

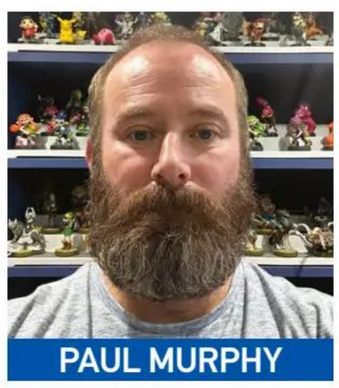
» [NES] Without mapper chips, games like *Kirby's Adventure* would have been impossible to create.

ROB O'FARRELL

■ Dovetail Games, formerly EA and Probe.

ALASTAIR LOW

■ Lowtek Games.



PAUL MURPHY

■ Ninty Media.

Some hardware images and peripherals courtesy of Evan Amos

» The Famicom 3D System shows that stereoscopic 3D is a white whale that Nintendo has chased for decades.

BEHIND THE TIMES

NINTENDO DOESN'T ALWAYS DRIVE GAMING HARDWARE FORWARD, AS EVIDENCED BY THESE TECHNOLOGIES IT WAS FRUSTRATINGLY RETICENT TO ADOPT

N64
OPTICAL DISCS

It's arguable that the SNES CD-ROM drive was a misbegotten concept that was better left unreleased. However, sticking to cartridges cost the N64 the Japanese RPGs that the SNES thrived on, as developers who were hungry for the high capacity that discs offered flocked to the PlayStation and Saturn instead.

GAME BOY ADVANCE
ILLUMINATED DISPLAYS

Maddeningly, Nintendo released the backlit Game Boy Light in Japan in 1998, but failed to add any lighting to the Game Boy Color or Game Boy Advance. Hardware costs may have increased, but as the popular Afterburner kit proved, players would happily shell out extra to render their games visible.

GAMECUBE
ONLINE GAMING

Despite supporting both dial-up and broadband, you could count the GameCube games with internet support on one hand. Things have improved in the years since, but Nintendo's insistence on using friend codes and refusal to integrate voice chat features has ensured that the company's online offerings *still* trail the competition.

WII
HDMI OUTPUT

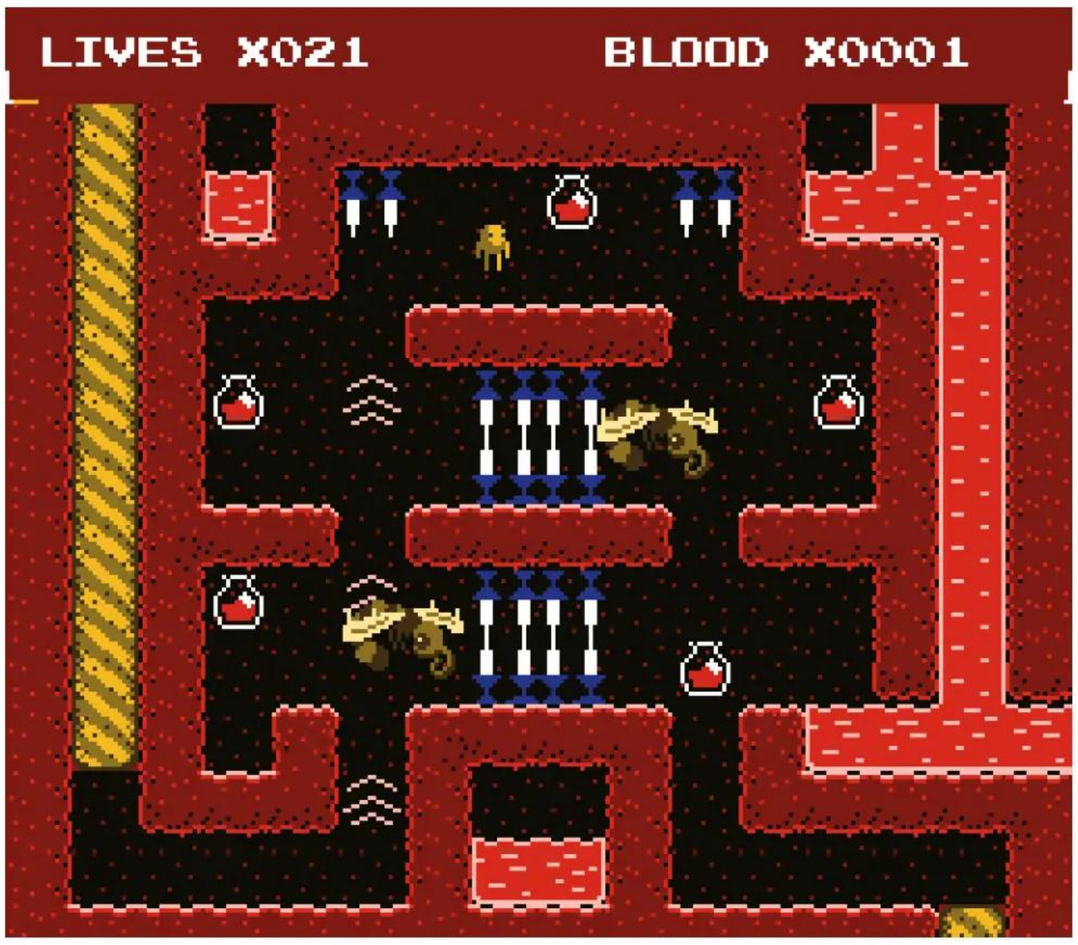
To be clear, sticking to standard definition analogue outputs for the Wii was fine in 2006. However, when the revised Wii Family Edition and Wii Mini came along in 2011 and 2012 respectively, the HDMI connector was well established and would have been appreciated, even if the output was only 480p.

▶ games and most of my friends that were a little bit more well off than I was had the Game Gear," remembers Paul Murphy of Ninty Media, whose family picked the Game Boy over its full colour rivals. "They all laughed but ultimately I had the last laugh, because their system was discontinued and we carried on getting fantastic experiences."

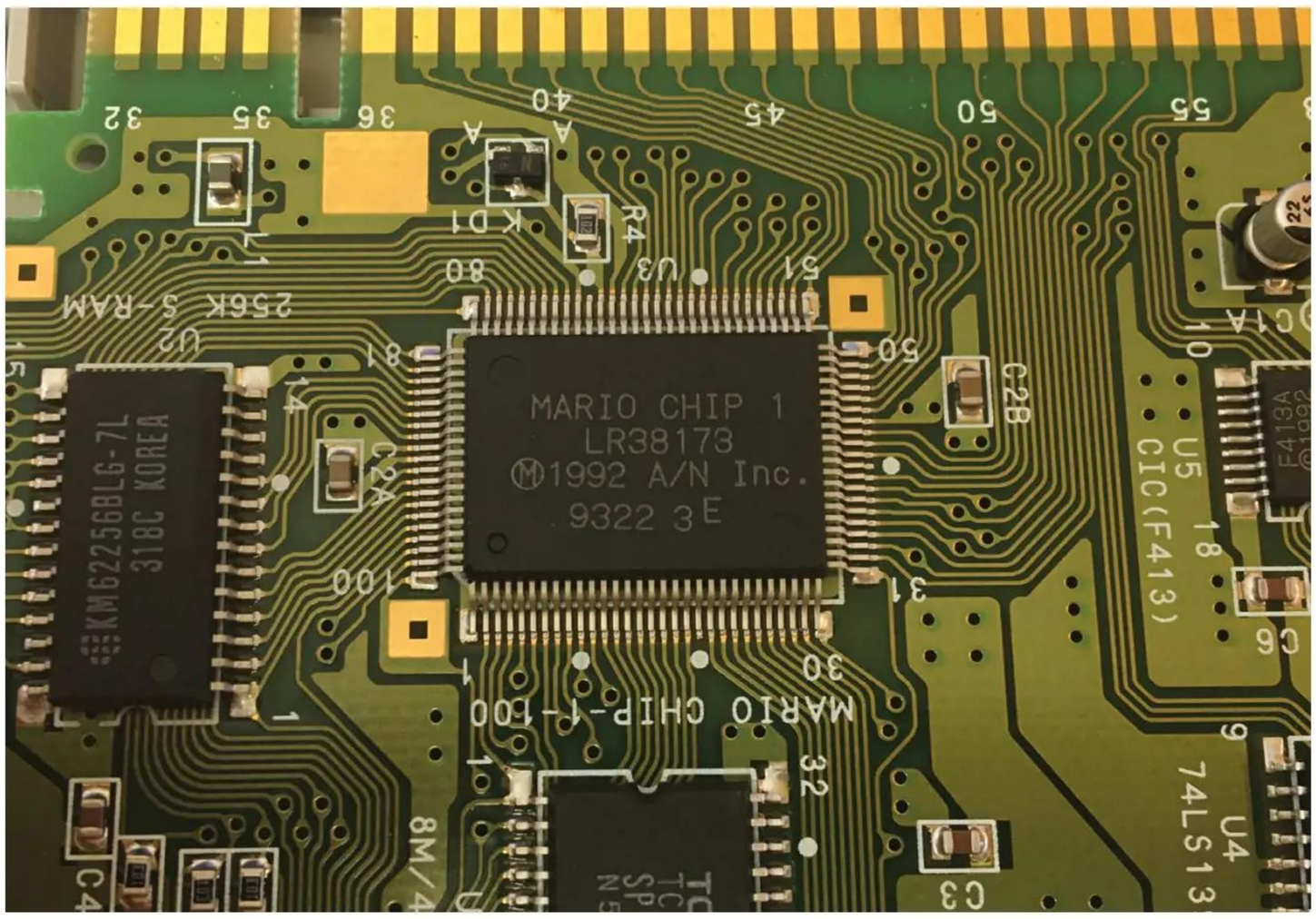
New hardware frequently augmented those experiences. The Super Game Boy allowed the SNES to play handheld games with a splash of colour, while the Game Boy Camera turned the portable into a rudimentary digital camera – and the Game Boy Printer gave you the chance to immortalise your handiwork in sticker form. The Transfer Pak even allowed you to import data into N64 games, with *Pokémon Stadium* being the most memorable use. Even when the Game Boy Color superseded the original machine in 1998, it featured special palettes designed specifically for certain cartridges.

» We'll bet that for many of you, this was the camera that took your first selfie.

In contrast to the Game Boy, Nintendo wanted the SNES to be as powerful as possible thanks to competition from the PC Engine and Mega Drive. The most impressive distinguishing feature was its ability to rotate and scale backgrounds using Mode 7, an effect not possible on any rival system. "*Super Mario World* was the first thing that I saw it in and obviously, the magazines didn't really do justice," says Paul, who cites *Super Probotector*, *Pilotwings* and *Super Tennis* as other Mode 7 favourites. The system's audio chip was also impressive using digital samples rather than FM synthesis. Nintendo's success has often come from picking the right partners, and the chip was engineered by future PlayStation architect Ken Kutaragi at Sony.



» [NES] Alastair Low has developed multiple NES games, including *Flea!* and *Tapeworm Disco Puzzle*.



» This is the humble Super FX chip – or MARIO, as it's more formally known.

Another key partner was Argonaut. The British developer had privately demonstrated its ability to coax 3D visuals from the NES and Game Boy, so Nintendo contracted it to design a chip that would assist the SNES in doing the same. "They were really pushing the Super FX chip, because obviously it enhanced and made up for the shortfalls that the SNES did actually have, with the processor being so underpowered," says Paul. "I remember going into Future Zone, at the back they had this wall of CRTs that were playing a massive demo of *Starwing* for months. I don't remember seeing that level of marketing for Nintendo before." Fellow British studio Rare pioneered pre-rendered 3D on consoles for Nintendo with *Donkey Kong Country*, extending the life of the console in the face of impending competition from 32-bit machines.

> "THEY WERE REALLY PUSHING THE SUPER FX CHIP, BECAUSE OBVIOUSLY IT ENHANCED AND MADE UP FOR THE SHORTFALLS THAT THE SNES DID ACTUALLY HAVE, WITH THE PROCESSOR BEING SO UNDERPOWERED"
> **PAUL MURPHY**

The SNES wasn't as successful as the NES but still wound up as market leader, so Nintendo chose to favour power again with the Nintendo 64, which launched in 1996. The choice to use cartridges was divisive, though Alastair notes "there was much less could go wrong with an N64 cartridge" in comparison to CD-ROMs, but the hardware from Silicon Graphics, Inc was fantastic at 3D, with perspective correction and texture filtering that made its worlds look more solid and stable than those on competing systems. What's more, Nintendo's unusually-shaped controller was tailor-made for 3D games – though analogue sticks had existed before, these were the first time they made sense at home. "Before anyone thought of a second analogue stick, they factored in the fact that you may need to control the camera," adds Paul, in reference to the C buttons.

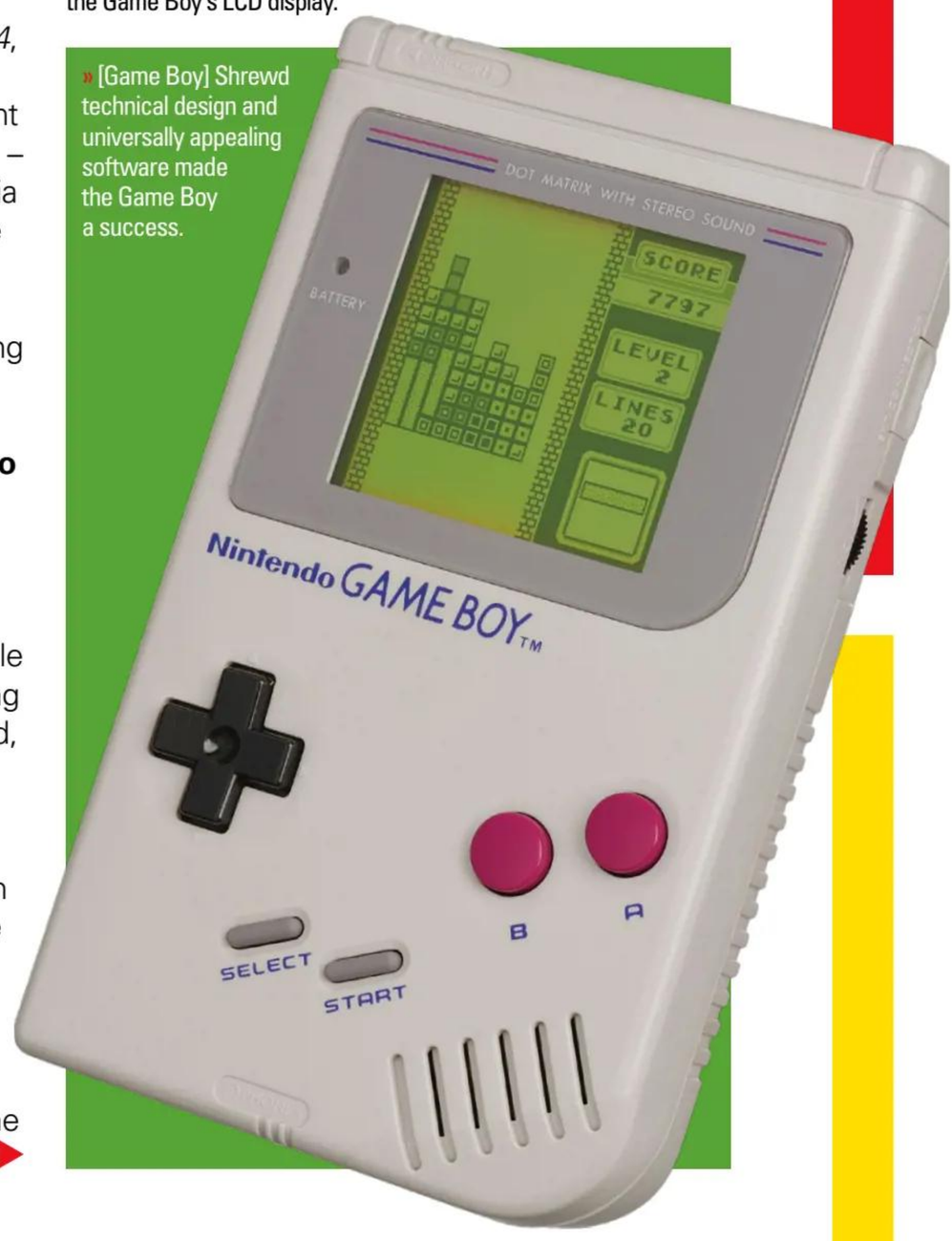
Likewise, the N64 wasn't the first console to include four controller ports, but was arguably the first to adequately support them thanks to games like *Mario Kart 64*, *GoldenEye 007* and *Super Smash Bros*. That became a standard feature on most subsequent consoles, as did support for controller vibration – something that was introduced as an add-on via the Rumble Pak on the N64, but soon became integrated into controllers. Unfortunately for Nintendo, these features and some excellent games weren't enough to stop the N64 finishing a very distant second to the PlayStation.

In the realm of handhelds, Nintendo saw less reason to rock the boat, and the Game Boy Color was an obvious but modest upgrade to the ageing Game Boy in 1998. The Game Boy Advance followed in 2001, and while it was more powerful, the most surprising thing about it was its horizontal orientation. That said, the ability to play multiplayer games from a single cartridge was a welcome addition. Not so welcome was the rubbish display of the original model. "I remember being abroad with my friend, and he had the Game Boy Advance SP and he could see it all times of the day," says Alastair, referring to the system's 2003 update with a front-lit screen, rechargeable battery and clamshell form factor. "I had the standard one and couldn't." That didn't stop the console being a big success, mind.

» [SNES] Games like *Super Punch-Out!!* were only released in Japan via the Nintendo Power flash cart service.

» [Game Boy] Often, clarity beat detail due to the ghosting effects of the Game Boy's LCD display.

» [Game Boy] Shrewd technical design and universally appealing software made the Game Boy a success.



ONE HIT WONDERS

SOMETIMES, NINTENDO WILL INTRODUCE AN IDEA THAT IT NEVER REVISITS – HERE ARE SOME OF OUR FAVOURITES

AMBIDEXTROUS CONTROLLER

The Virtual Boy is the only Nintendo console to have a fully symmetrical control pad – something which could be quite handy for players who'd prefer to swap the layout around. The Wii Classic Controller and Wii U Pro Controller both come close, but for the difference between the d-pad and buttons.

KIRBY: TILT & TUMBLE

Long before gyroscope players dominated Turf Wars in *Splatoon*, this Game Boy Color game incorporated motion sensors in its cartridge, letting you roll Kirby around colourful landscapes to your heart's content. Though Nintendo revisited tilt on the GBA, this was its sole experiment with the technology on the 8-bit handheld.

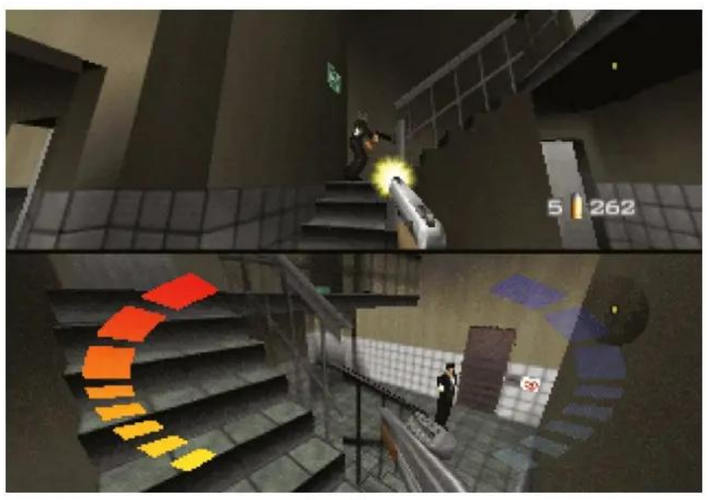
DONKEY KONG: JUNGLE BEAT

OK, so the DK Bongos were obviously used in the *Donkey Konga* games, but the use of the music controller in another genre was simply inspired – and as far as we know, it's still the only bongo-based platformer out there. It added satisfying physicality to beating up the baddies, too.

POKÉWALKER

It may seem a little redundant given the handheld-first nature of the *Pokémon* franchise, but we always liked this cute little pedometer that accompanied the *HeartGold* and *SoulSilver* versions on the DS. If nothing else, it encouraged us to take walks with Pikachu before *Pokémon Go* became a big deal.

» [N64] Analogue control was essential to the precise, measured feel of *Super Mario 64*'s movement.



» [N64] Games like *GoldenEye 007* proved the wisdom of adding more control ports to the console.

» The Rumble Pak was first bundled with *Star Fox 64*, and occupied the N64 controller's expansion port.

The GameCube was also arguably another conservative design, despite its distinctive appearance. It certainly wasn't a slouch when compared to the PlayStation 2 and Xbox – speaking in issue 103 of *Edge*, Criterion's Alex Ward praised it as "a great machine" and Jez San said that the "specifications are great". However, an anonymous developer was damning, saying that "the hardware and controller (good though they are) don't do anything special, apart from be small". Plenty of players love the GameCube controller, but it was simultaneously close to the norm while being just distinctive enough to be a source of complaints for players picking up third-party games. Additionally, the system's small DVDs were cute but developers wouldn't have minded the extra storage of standard DVDs.

> "PEOPLE WERE BUYING IN THEIR DROVES BECAUSE YOU'D HAVE THE PEOPLE THAT WANTED IT FOR ZELDA OR METROID, NINTENDOGS OR ANIMAL CROSSING"
> **PAUL MURPHY**

There were still highlights, of course. The DK Bongos were a delightful prelude to the *Guitar Hero*-inspired plastic instrument boom. Meanwhile, the GameCube to Game Boy Advance link cable allowed Nintendo to experiment with multiple displays and was used in a variety of games, but never became a huge feature. *The Legend Of Zelda: Four Swords Adventure* best illustrates why, as it was an excellent experience but enjoying it at its best required four GBA consoles, four link cables and a GameCube – a heavy commitment to Nintendo hardware, even divided among a group of friends.

Despite being blessed with plenty of fantastic games, the GameCube continued Nintendo's trend of declining home-console sales. Faced with the realisation that its existing approach wasn't working, Nintendo changed tactics, deciding that it didn't need to match the processing power of its rivals if it could provide sufficiently unique experiences. The handheld market was the ideal place to test that – though Sony was preparing to enter the market with the PlayStation Portable, Nintendo had dominated the sector for over a decade. Even then, the company hedged its bets, stressing that its new machine wasn't a replacement for the Game Boy line.

On the face of it, the Nintendo DS was a strange mix of ideas. Its vertically stacked twin displays were reminiscent of the Game & Watch handhelds of the Eighties, the microphone was a throwback to the Famicom and the last handheld to integrate a touchscreen interface was Tiger Electronics' risible Game.com. Prior to the system's launch, *games™* expressed concern that it was "little more than a gimmick – something to keep the crowds occupied until the true successor to the Game Boy Advance appears". Ultimately, the touchscreen proved most important, as Nintendo was releasing games that targeted very broad audiences and the intuitive interface lowered the barriers to enjoying them. "You had *Brain Age*, *Big Brain Academy* and things like that, and there was something for you, no matter what it was that you wanted," says Paul. "People were buying in their droves because you'd have the people that wanted it for *Zelda* or *Metroid*, *Nintendogs* or *Animal Crossing*." Rob O'Farrell created the original rhythm action

MARIO KART LIVE

It's not ideal on every floor and your cat probably hates it, but there's no denying the cool factor that accompanies turning your living room into a raceway. Just don't let your kids start throwing banana peels around, unless you want a quick trip to the hospital. Oh, and ants.

game *Zubo* for the DS at EA. "It was the perfect platform for kids, and this was a kid's IP that we wanted to grow and that's why the machine was perfect for it," he recalls. "It was good fun to watch the characters because they come alive, they were just really good to create. Because of the touchscreen and the dance moves, we could do the tapping with the stylus and that worked really well." Developers got even more options with the refreshed DSi, which added a store for downloadable games and a camera that few games ultimately used. The DS was an enormous success, with the various models selling a shade over 154 million units – Nintendo's most popular hardware ever, to date.

The bigger test of this new philosophy came in the home-console space, though. In terms of raw power, the Wii didn't represent a full generational leap over the GameCube. The controller was a complete departure from the norm, packed with motion-sensing hardware to enable natural gesture-based controls, pointer controls and more – technology that had been offered by Gyration Inc to Microsoft and Sony, both of which turned it down. The device was shaped like a TV remote control rather than a traditional game controller in order to broaden the appeal of the console. For more traditional controls, the Nunchuk attachment added an analogue stick and additional buttons, or a Classic Controller could be attached.

Wii Sports was packaged with the console when it launched in 2006, and proved to be its killer app – since players simply had to imitate the motions involved in the real-life sports, everyone from the youngest kids to the elderly could enjoy the game with a minimum of instruction. The active nature of the game

» [Virtual Boy] Look past the colour scheme, and the Virtual Boy can handle some rather lovely sprite work.

VIRTUAL INSANITY

HOW THE VIRTUAL BOY PROVED THAT INNOVATION ISN'T ALWAYS PROGRESS

3D displays have been a repeated theme with Nintendo, that it has never quite pulled off – it released glasses for the Famicom and prototyped support for the GameCube, as well as including it in the 3DS. However, the Virtual Boy is the effort Nintendo would like us all to forget, a commercial bomb that sold under a million units and saw less than two dozen games released. It's rarely referenced and its games have never been reissued, despite the fact that the 3DS provided the perfect opportunity to do so. Though the system was undoubtedly a commercial failure, it's home to some good games and worthy of examination, as it uses a wholly unique display technology developed by Reflection Technologies, Inc – technology that Nintendo chose to use after Mattel, Hasbro and Sega all turned it down.

» Here's the motorised mirror unit that turns those LED columns into full frames.

The way it works is that the headset uses a distinct display for each eye, as most modern virtual reality devices do. Each display consists of a 1x224 LED array, which is updated 384 times per frame and reflected using rapidly oscillating mirrors, so as to simulate a full 384x224 frame. At around 50 frames per second, this means each LED array updates approximately 19,200 times per second. Incidentally, the use of LEDs is to blame for the system's red graphics, as these were the cheapest colour available and supposedly drew less power than alternative options.

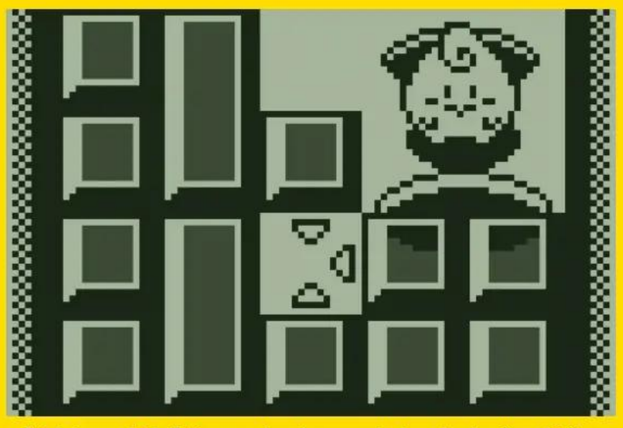
MINIATURE MARVEL

NINTENDO'S SMALLEST CONSOLE IS ALSO ITS LEAST RECOGNISED

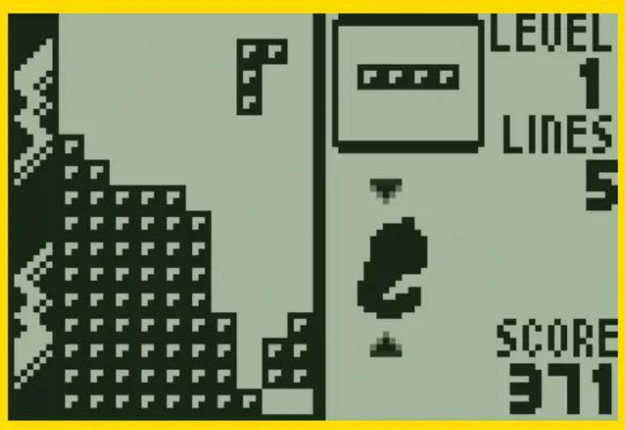
■ Between the massive success of the Game Boy and DS handheld families, it's very easy to forget that Nintendo did release another handheld in 2001 – the delightfully dinky Pokémon Mini. The low-cost console is the smallest Nintendo console to offer interchangeable cartridge games, at just 74mm x 58mm x 23mm, and was first released in North America in November 2001. It soon followed to Japan and Europe, and was available in three colours.

Given the size of the machine, its capabilities were understandably rather limited. The system's 8-bit Epson S1C88 CPU ran at 4MHz, and its monochrome LCD display had a resolution of just 96x64 pixels, with cartridge ROM capacity of up to 512KB. This did all make it incredibly cheap to run, as it required just one AAA battery and could reportedly last up to 60 hours on that.

As you've probably guessed from the name, the low-cost console exclusively hosted *Pokémon* games, though there was some variety – the console's line-up of ten games includes pinball, minigames and even a version of *Tetris*. Sadly, half of the cartridges never saw release outside of Japan, with just four available in North America and five in Europe.

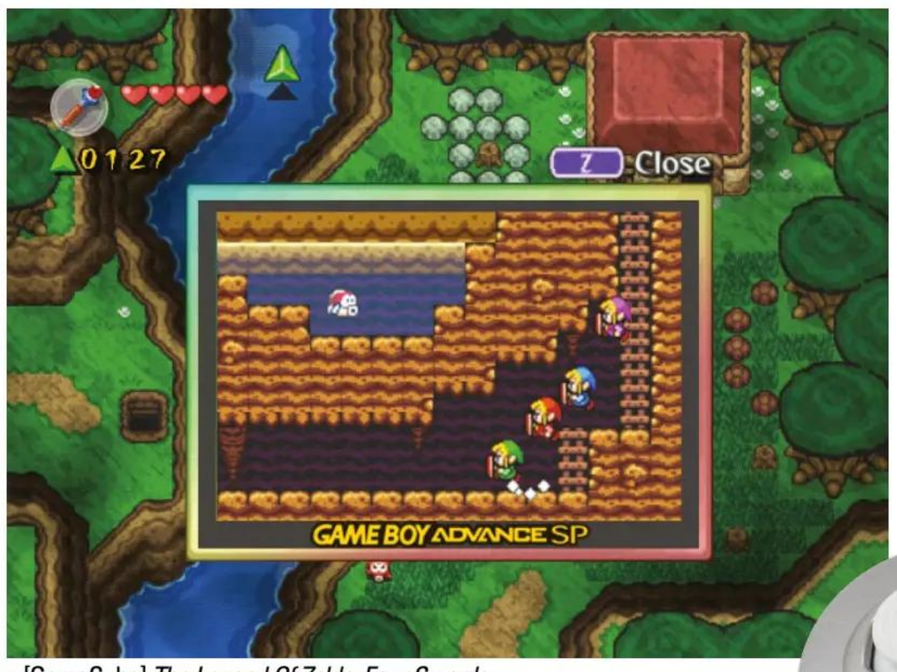


» [Pokémon Mini] Due to the time period, only the first 251 Pokémon appear in Pokémon Mini games.



» [Pokémon Mini] Who's that Pokémon? It's Weedle! Meme points if you said Pikachu, though.

» [Game Boy Advance] The Game Boy Advance was a safe option, and an absolute powerhouse for 2D games.



» [GameCube] *The Legend Of Zelda: Four Swords* was great, but far from easy to get set up

» [GameCube] In lieu of hardware experimentation, Nintendo tried stylistic innovation during this era.

» Hands up – who ever actually used the infra-red communication feature on their Game Boy Color?

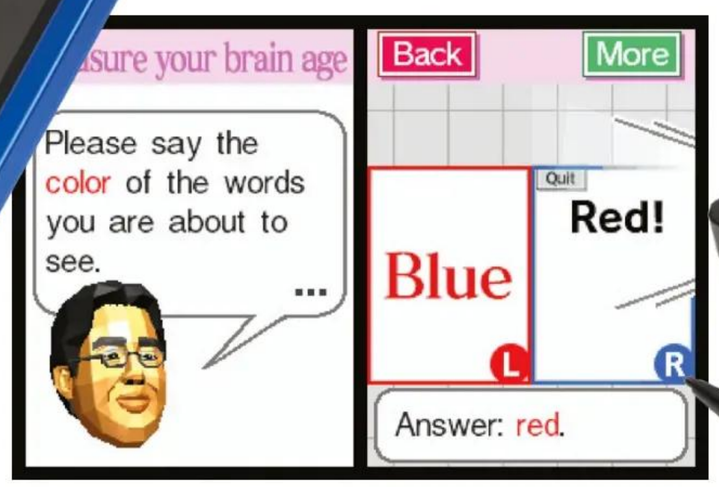
» The GameCube's much-loved Wavebird paved the way for wireless controls as standard on the Wii.

also drew plaudits, and Nintendo followed up on the fitness theme with *Wii Fit*, which utilised the Balance Board accessory. Plenty of traditional games made great use of the Wii Remote too, including *Resident Evil 4* and *Sin & Punishment: Successor Of The Skies*. "Stuff like *Metroid: Other M*, I absolutely love that control scheme of changing between [regular controls] and [pointing], it's the only console that would let you do that kind of interface," says Alastair.

However, there was a portion of the gaming audience that never really embraced the Wii, and third parties sometimes struggled to find an audience on the platform. In a 2010 interview with IGN, THQ's CEO Brian Farrell would say that "if you look at what's selling on Wii, it's Nintendo's stuff and it's kids, family and casual" and that "more of the core-gaming audience is on 360 and PS3". Even today, its 'waggle' controls are often derided. "I think developing for the Wii was hard actually, because trying to get those controls and making it feel really good was always a challenge," says Rob. "It was a very Nintendo platform, they knew how to get the best out of those controllers. We did *Harry Potter* on the Wii and the spells worked, but it wasn't our first platform of choice to develop for." The Wii MotionPlus add-on did increase the accuracy of the motion tracking in 2009, but by then it hardly mattered – the Wii was already well on its way to overtaking the NES as Nintendo's best-selling home console ever.

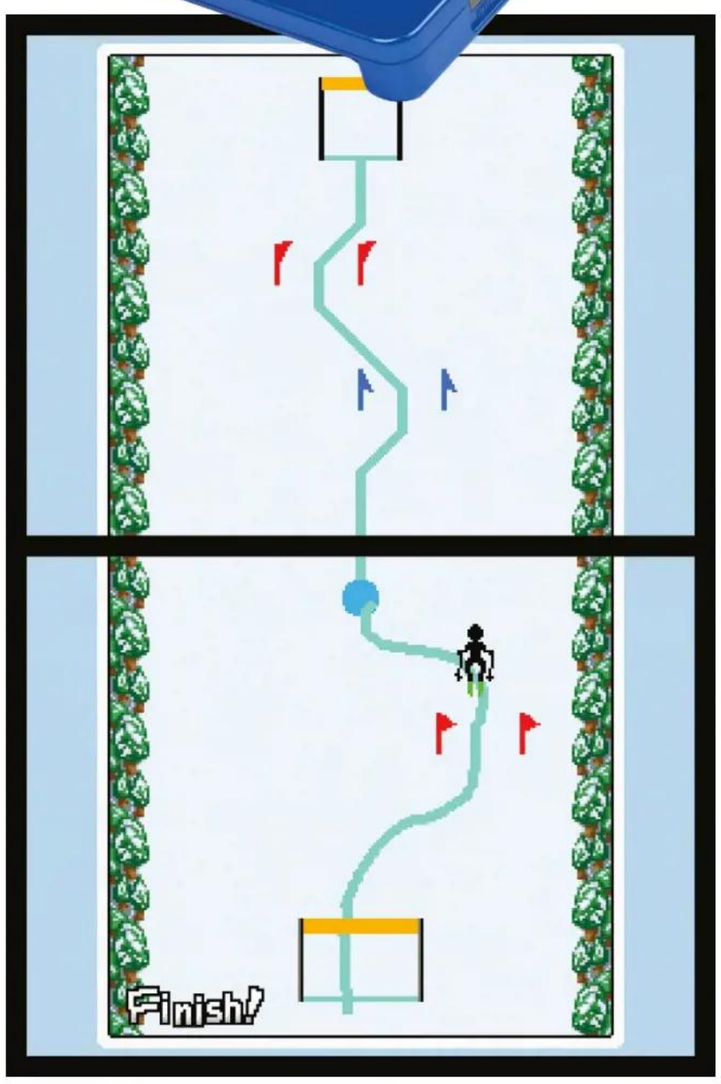
The good times couldn't last forever though, and although it was announced just after *Avatar* had smashed box-office records and driven renewed interest in 3D movies, the 3DS was the first indication of tougher days to come. The new handheld resembled its predecessor, but with a wider glasses-free 3D display as the top screen. At E3 2010, Shigeru Miyamoto explained that he felt that

» Arguably, the Game Boy Advance SP is the system we should have had all along.



» [DS] *Brain Training* used all of the hardware's functions, and appealed to non-traditional gamers.

» The DS Lite arrived in 2006, improving the size and cosmetic appearance of the handheld.



» [DS] The *WarioWare* games have historically served as excellent demonstrations of new hardware capabilities.

» Without online options, Nintendo released expansion content for *Super Mario Advance 4* via e-Reader cards.

» [Wii] Games like *Sin & Punishment: Successor Of The Skies* are well worth embracing the Wii Remote for.

» This was exactly the co-driver scenario Rob had in mind for *Need For Speed: Most Wanted U*.

3D was important because "it can be very difficult without 3D visuals to understand the depth and distance between objects and that spatial relationship". However, players were less convinced. The high price of the console contributed to sluggish sales when it launched in 2011, and Nintendo had to enact a drastic price cut just months into the system's life to stimulate sales. "I didn't see it as that much of an upgrade from the DS, and it was a sweet spot 3D that you had to be in the correct place for," recalls Alastair.

The 3D could look great, especially with the revised New Nintendo 3DS models that included eye tracking, but rarely seemed to add much to games. Soon enough, Nintendo delivered the 2DS which lacked that signature feature, and many later games simply didn't support 3D at all. The new gyroscopic controls and cameras added more options, but didn't see much use. The system's best-loved innovation was arguably StreetPass, a feature which allowed nearby 3DS systems to wirelessly exchange data in standby mode. The exact nature of the data depended on the game in question, but plenty of people just loved the social aspect of encountering other people's Mii characters and using them in games like *StreetPass Quest*.

While the 3DS never approached its predecessor's sales figures, it did eventually sell well. The same couldn't be said for the Wii U. The console was launched in 2012 and provided a step up in power from the Wii, comparable to the Xbox 360 and PlayStation 3, with its primary distinguishing feature being the GamePad – a bulky controller with a touchscreen as well as traditional controls, which could be used as a second screen or a way to play the console without the use of a TV. In a special E3 2011 edition of Iwata Asks, Shigeru Miyamoto expressed the feeling that the screen was "a tool that makes things easier to understand" and that "we thought in that case, we'd stuff it with features so it could do anything".

> "MOST OF THE PEOPLE I SPEAK TO THAT AREN'T GAMING ENTHUSIASTS, THEY THOUGHT THE TABLET ITSELF WAS AN ACCESSORY"
> **PAUL MURPHY**

From the start, the Wii U's branding and resemblance to its predecessor were a problem. "Most of the people I speak to that aren't gaming enthusiasts, they thought the tablet itself was an accessory," says Paul. "They didn't understand it was a completely new console." But the bigger problem was finding good uses for the secondary display. At the Develop conference in 2012, months ahead of the Wii U's launch, industry analyst Michael Pachter called the GamePad "a solution in search of a problem". It was tough to argue

» [Wii] *Wii Sports* was responsible for a Nintendo boom era, and more than a few smashed TVs.

» The versatility of the Wii Remote was occasionally undercut by the plastic housings it attracted.

» [3DS] *Super Mario 3D Land* was one of the few 3DS games to use 3D effectively.

▶ with that sentiment when the console finally arrived, as even Nintendo struggled. In its review of *Nintendo Land*, *games™* claimed that "Nintendo's confusion over what it wants to achieve with the Wii U GamePad" was a problem, and further noted that the device "feels a bit short-changed" in its review of *New Super Mario Bros U*.

> "THE SWITCH IS WHAT EVERYBODY WANTED FOR A WHILE, ISN'T IT? TO BE ABLE TO PLAY A GAME AND INSTANTLY JUST PLAY IT BACK AT HOME"
> **ALASTAIR LOW**

Compelling use cases did sometimes present themselves though, such as in the well-received Wii U version of *Need For Speed: Most Wanted*. "My daughter would have been about three or four, and she was too young to play games." says Rob, the game's producer. "How can you make sure they have fun playing it while driving at speed?" The answer was the Co-Driver Mode, in which a second player could use the GamePad to assist with steering, clear traffic and roadblocks, and even change the time of day. "We could put the controls in my son or daughter's hand and if they're about to crash, you'd just steer away a little bit. We did a lot of play testing with other kids, and they didn't want to know that the control has been taken off them, but they didn't want to crash."

The Wii U suffered from a vicious cycle, as slow sales meant that those rare third parties that maintained support for the console rarely devoted much thought to GamePad features. In turn, there were few compelling reasons to buy the console. The console tanked, and the experience seems to have inspired something of a change in Nintendo's hardware philosophy. For years the company tried to find technologies that would lead to compelling new gameplay possibilities, but with its next system, it placed its focus on designing technology to aid players in fitting games into their everyday lives.

» Nintendo Labo represents a more environmentally sound alternative to the plastic tat of the Wii era.

The result was the Switch, which launched in 2017 and merged Nintendo's handheld and home-console lines. The console, which looks like a sleeker version of the Wii U GamePad, functions as a stand-alone portable system, but also hooks up to a TV via the packaged docking unit. Its Joy-Con controllers can either be attached to the central tablet, or slotted into a frame that offers handles for added comfort. "The Switch is what everybody wanted for a while, isn't it? To be able to play a game and instantly just play it back at home," says Alastair. The initial reveal of the console effortlessly communicated that concept, too.

It wasn't just the technology that Nintendo got right, though. "There was always something coming, whether it was a new franchise like *Arms*, an old trusted favourite or ports of Wii U games, because they hadn't really reached that audience," says Paul. If anything, the Wii U ports highlighted the superfluous nature of the GamePad's second screen, with few games feeling meaningfully diminished without it. Without the need to support two different systems, Nintendo could also maintain the pace of game releases more easily. The Switch was highly popular from day one, and has sold over 141 million units at the time of writing, giving it a real shot of surpassing the DS.

With the Switch now over seven years old, Nintendo has declared that it will reveal a new system in the near future. Players and industry figures alike anticipate that it won't deviate far from the hybrid design of the Switch, but if that idea sounds mildly disappointing to you, there's no need to fret. While the Switch itself features plenty of options between established button, touchscreen and motion controls, Nintendo has still tried out some more experimental ideas. *Ring Fit Adventure*'s Ring-Con recalls the exercise-based games of the Wii era, while Nintendo Labo gives players the opportunity to build their own peripherals from cardboard kits. Then there's *Mario Kart Live: Home Circuit*, a mixed-reality version of the popular racing franchise that allows you to drive radio-controlled cars with integrated cameras using your Switch.

Ultimately, those Switch games give us confidence for the future. Compared to the other hardware manufacturers active today, Nintendo is defined by its willingness to explore new ways of interacting with videogames. Those ideas don't always succeed, but there's a long enough track record of hits over the decades that it's impossible to deny just how much the company has done to transform our hobby. No matter what the next Nintendo console looks like, we can't wait to see what delights will be born from that passion for invention. ✱

» This Balance Board fondling was what Wii owners were expected to aspire to.

» Images like this didn't help consumers to distinguish between the Wii U and its forebear.

INTERFACE ITERATION

NINTENDO'S SWITCH CONTROLLERS ARE THE RESULT OF 40 YEARS OF REFINEMENT – HERE'S HOW WE GOT FROM HUMBLE BEGINNINGS TO THE PRESENT DAY

GAME & WATCH

■ This is where it all begins – the cross-shaped directional pad sets the standard for digital controls on Nintendo systems going forward.

NES

■ Moving on from the bespoke controls of Game & Watch devices, Nintendo establishes two action buttons and two function buttons as standard.

SNES

■ The four-button diamond layout appears for the first time, as do the shoulder buttons – both ideas that would be widely adopted across the industry.

N64

■ Handles come as standard for the first time, though the third doesn't last. Having an analogue stick as standard soon catches on across all consoles.

GAMECUBE

■ Integrating vibration as standard and borrowing the second analogue stick from Sony's DualShock, this is pretty close to modern controllers.

WII

■ The remote control body shape was a one-off, but the wireless connectivity, Home button and motion-sensing features live on today.

WII U PRO CONTROLLER

■ This evolution of the Wii's Classic Controller is very modern, but shows Nintendo's ongoing indecision over analogue stick placement.

SWITCH PRO CONTROLLER

■ The Pro Controller is very similar to its Wii U equivalent, with the most notable change being the return to the GameCube-style asymmetrical analogue stick placement.

SWITCH JOY-CON

■ The Joy-Con shares the Pro Controller's analogue stick placement – this layout ensures that the stick is always on the left when a single Joy-Con is used as a mini-controller.

THE 90s

A DECADE OF DEFINITIVE GAMES!

THE NINETIES SAW GAMING GO THROUGH A HUGE TRANSFORMATIVE CHANGE THAT MAY NEVER HAPPEN AGAIN. IT LED TO INNOVATION, EXCITING NEW IDEAS AND THE GENERAL EXPANSION OF THE VIDEOGAME INDUSTRY. JOIN US AS WE REVISIT THIS INCREDIBLE DECADE AND THE MANY HIT GAMES IT SPAWNED

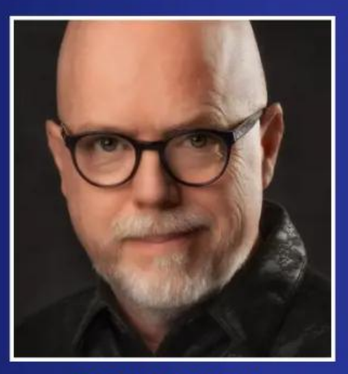
WORDS BY NICK THORPE AND DARRAN JONES

INTERVIEWEES

JAZ RIGNALL
Editor, *Mean Machines*

ANDY PALMER
Founder, Arcade Club

TOM ZITO
President and CEO, Digital Pictures



TOM HALL
Cofounder, id Software

KEITH HAMILTON
Lead programmer, *Grand Theft Auto*

MARTIN EDMONDSON
Cofounder, Reflections

GAVIN RUMMERY
Lead programmer, *Tomb Raider II*

CHRIS SCHILLING
Deputy editor, *Edge*

PAUL DAVIES
Editor, *Computer & Video Games*

MINH LE
Co-designer, *Counter-Strike*

It's quite possible we'll never have a decade like the Nineties in gaming again. Think about it. When was the last time you can recall a span of ten years that saw not only spectacular growth within the industry itself, but an incredible variety of consoles, systems and games to enjoy?

In the early Nineties you had the rise of 16-bit systems and handhelds, which quickly gave way to 32-bit machines like the PlayStation, then powerful systems like the Dreamcast in the decade's twilight years. That's an exponentially huge leap in technology in a short space of time and that technology unlocked all manner of interesting games as the decade progressed.

Humble 8-bit computers were still offering gaming experiences like *Lemmings*, *Turrican* and *Mayhem In Monsterland* in the early Nineties, while even the ancient Atari 2600 managed to last until 1992. Nintendo's Game Boy, which had debuted overseas in the summer of 1989, became ubiquitous with handheld gaming during the Nineties, effortlessly seeing off powerful competitors like the Atari Lynx and Game Gear, while home computers like the Atari ST and Amiga proved they still had plenty to offer over their expensive PC counterparts (at least for a short time).

Technology marches ever onwards though and polygons (which were admittedly around in the previous decade) began to dominate, with arcade developers like Namco and Sega using them to power their gaming experiences to make them feel even more realistic. In a way this aggressive development helped accelerate the demise of the traditional arcade. After all, one of the main reasons gamers visited arcades was to receive an experience they couldn't emulate in the home – that became less of an issue as 3D-capable systems like the PlayStation were able to replicate arcade games with a previously unmatched level of authenticity.

This strive for realism also brought controversy with the mainstream media commenting on the violence in games like *Night Trap*, *Mortal Kombat* and *Grand Theft Auto* far more than it had in previous decades. Digitised graphics and the enhanced power of consoles and 3D-accelerated PCs offered an unrivalled sense of 'realism' that may look laughable today, but had plenty of critics twitching about how much games were changing.

It wasn't just games that became unrecognisable. There was huge growth within the industry itself. More complicated visuals in the mid-Nineties and onwards saw teams expand in size to accommodate, while many classic developers of the Eighties struggled to adapt to the demands of 3D gaming and closed or were swallowed up by their rivals.

The following pages will not only examine each individual year of the Nineties, but will also celebrate 90 of the games that arguably defined the decade for so many of us. How many did you get to experience? ▶

DEFINING GAMES!

SUPER MARIO WORLD

NINTENDO EAD

■ With its meticulous level design and tight controls, Mario's SNES debut became the poster child for 2D platforming. Three decades on, it's still unbeatable.

KLAX

ATARI GAMES

■ Atari wasn't wrong when it said, "It is the Nineties and there is time for *Klax*." Its frantic, tile-stacking hit was converted to a huge number of home systems.

TURRICAN

RAINBOW ARTS

■ Manfred Trenz's beautifully polished shooter proved there was still plenty of life in the C64 and that it could easily compete with its console contemporaries.

JOHN MADDEN FOOTBALL

PARK PLACE PRODUCTIONS

■ An easy-to-use interface, accessible controls and challenging AI transformed EA's 1988 release into a global console mega hit, which is still going strong today.

THE SECRET OF MONKEY ISLAND

LUCASFILM GAMES

■ *Monkey Island*'s delightfully quippy script and lovable characters cemented LucasFilm's reputation for cleverly written adventures and shaped the very genre itself.

WING COMMANDER

ORIGIN SYSTEMS

■ Chris Roberts' *Star Wars*-inspired epic ushered in a bold new era of space combat games that put as much effort into their frantic dogfights as they did storytelling.

F-ZERO

NINTENDO EAD

■ It might have lacked polygons, but *F-Zero*'s blistering speed and Mode 7 trickery proved that home systems could deliver exciting, arcade-like experiences.

PGA TOUR GOLF

STERLING SILVER SOFTWARE

■ Clever mechanics, excellent physics and slick TV-like presentation helped revolutionise digital golf in a way that just hadn't been possible on earlier systems.

DEVIL CRASH

COMPILE

■ With a compelling graphical theme and features a real table could never provide, *Devil Crash* was a great pinball game that the PC Engine import crowd loved.

» [Amiga] *Speedball 2*'s futuristic sports action mixed brutality and style to hook players.

» [C64] With games like *Rainbow Islands* still arriving, the popularity of the 8-bit computers makes sense.

1990

As the new decade dawned, most players here in the UK were playing games on home computers. The 16-bit Amiga and Atari ST were tempting more players to upgrade their hardware, with releases like *Kick Off 2*, *Speedball 2*, *Star Control*, *Super Cars* and *Wings* all impressing players. Those still playing the venerable 8-bit machines still had plenty to enjoy though, thanks to games like *Flimbo's Quest*, *Creatures*, *Lords Of Chaos* and Dizzy's continuing adventures, as well as great arcade conversions like *Midnight Resistance* and *Rainbow Islands*.

Player preferences were changing, however. The launch of *Mean Machines* magazine reflected increased interest in the console market and it wasn't hard to see why players were hooked. Highlights of the year included *Dr Mario* and *Mega Man 3* on the NES and *Alex Kidd In Shinobi World* on the Master System, while import devotees swore by games like *Bomberman* on the PC Engine. The Game Boy made its European debut, while Japanese players gained the Game Gear and Lynx owners enjoyed conversions of *RoadBlasters*, *Rampage* and *Klax*.

Computer manufacturers could see the way the tide was turning, but the Commodore 64 Games System and Amstrad GX4000 were limp efforts based on outdated hardware, paling in comparison to the 16-bit machines – the Mega Drive finally launching in Europe and the Super Famicom in Japan. Sega's machine gained games like *Castle Of Illusion*, *Thunder Force III* and *Strider*, while Nintendo's new system roared out of the gate with offerings like *Pilotwings* and *Actraiser*.

In the arcades, SNK's new Neo Geo MVS hardware attracted operators with its affordable cartridge-based games, such as *NAM-1975* and *Magician Lord*. Players who fancied an extended spell with the games could rent the home-console equivalent, the Neo Geo AES. Atari Games also had some success with *Pit Fighter* and *STUN Runner*, with their still-novel digitised sprites and polygonal graphics doing plenty to impress arcade regulars – though the latter is a far stronger game.

JAZ RIGNALL ON THE CONSOLE WARS

"Sega vs Nintendo wasn't a 'trend'. It was simply another chapter in the ongoing tradition of kids' tribalism around specific brands. This kind of tribalism also applies to car brands, graphic cards, camera brands and almost anything else you can think of where people can spend money on an item that has a competitor and they want to feel like they've made the best choice. It was kind of fun winding people up about it back in the day, but honestly? As someone who enjoyed games on all systems, it was always really annoying. Sure, everyone should have their favourite systems, but if you've reached adulthood and have yet to figure out all systems have great games and can deliver huge amounts of fun, you really are a sad sack."

» [SNES] New hardware allowed for new possibilities in Link's third adventure.

» [Arcade] Co-op beat-'em-ups were big business in the arcades of the early Nineties.

1991

If you stepped into an arcade in 1991, you couldn't help but notice that beat-'em-ups were in vogue, particularly licensed ones like *Teenage Mutant Ninja Turtles: Turtles In Time* and *The Simpsons* by Konami, as well as Sega's *Spider-Man: The Video Game*. However, it was the monster success of *Street Fighter II*'s one-on-one fisticuffs that helped to reverse a trend of arcade decline. *Street Fighter* director Takashi Nishiyama's own spiritual successor, SNK's *Fatal Fury*, helped to drive the nascent fighting game boom.

In tech terms, the console manufacturers were each touting their ambitious CD-ROM plans. Nintendo worked with Sony to develop a SNES-compatible system, only to announce a deal that it had secretly signed with Philips in the summer. NEC bolstered its existing PC Engine CD-ROM drive with the Super System Card, with *Dragon Slayer: The Legend Of Heroes* serving as an early highlight for the new format. Sega launched its Mega-CD in Japan at the end of the year, with *Sol-Feace* being its most exciting game.

Cartridges may not have held the same futuristic appeal, but they hosted extremely fine games. The SNES arrived in North America and quickly captivated players with games like *SimCity*, *Super Castlevania IV*, *Super Ghouls 'N Ghosts*, *Super R-Type* and *Super Tennis*, as well as *Final Fantasy IV* and *The Legend Of Zelda: A Link To The Past* in Japan. The Mega Drive became a phenomenon thanks to a certain speedy hedgehog, but also gained strong games like *EA Hockey*, *Shining In The Darkness*, *Streets Of Rage* and *ToeJam & Earl*.

On the home computers, sequels like *Super Cars II* and *Turrican II: The Final Fight* delivered reliable fun, while *Hunter* was an early demonstration of how much fun sandbox game design could be. Geoff Crammond released the first game in his *Formula 1 Grand Prix* series, and Team17 announced its arrival on the Amiga with *Full Contact* and *Alien Breed*. Duke Nukem made his platform game debut on the PC, and *The Shadow Of Yserbius* became one of the first graphical online RPGs. ▶

ANDY PALMER ON CAPCOM'S ARCADE HIT

"Street Fighter II occupies rarefied air in the realms of arcade titles. It quite literally reinvented the arcade landscape whilst giving birth to the modern esports scene with its onus on competitive play. Not many games can say that. Unfortunately, its success led to the death of many classic machines. As operators scrambled to take advantage of the game's popularity, they destroyed a lot of dedicated machines by converting them into *Street Fighter II* cabinets. The worst I've personally seen is a hideous conversion of *Space Invaders*. How? Don't ask!"

DEFINING GAMES!

LEMMINGS

DMA DESIGN

As deviously difficult as its protagonists were cute, *Lemmings*' blend of useful character skills and freeform puzzle design saw it swarming to multiple systems.

STREET FIGHTER II: THE WORLD WARRIOR

CAPCOM

Capcom's epoch-making fighter reinvigorated both the fighting genre and the arcade scene, thanks to its distinctive brawlers and excellent fighting engine,

SONIC THE HEDGEHOG

SONIC TEAM

Sega's attitude-laden answer to Mario highlighted the power of its 16-bit console and paved the way for a slew of copycat anthropomorphic clones.

NEVERWINTER NIGHTS

BEYOND SOFTWARE

Don Daglow's online take on *Dungeons & Dragons* grew alongside its dedicated community, leading to it becoming part of AOL's popular subscription service.

STARBLADE

NAMCO

The cutting-edge visuals and bold, brash spectacle of *Starblade* proved that arcades could still offer exhilarating experiences that weren't available elsewhere.

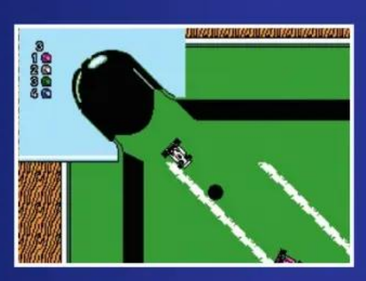
ANOTHER WORLD

DELPHINE SOFTWARE

Eric Chahi's ambitious and influential adventure set new standards at the time, thanks to its well-observed cutscenes, clever puzzles and innovative mechanics.

MICRO MACHINES

CODEMASTERS



Originating on the NES, Codemasters' inventive top-down party game turned a conventional home and its everyday objects into thrilling racing circuits.

SID MEIER'S CIVILIZATION

MICROPROSE

Why build a city when you can create an empire? Sid Meier's strategy gem set an industry standard, even if it would significantly evolve with its sequels.

ROAD RASH

ELECTRONIC ARTS

EA's vehicular combat game saw gamers trading punches, upgrading their bikes and outracing the police as they careened through the detailed Californian countryside.

DEFINING GAMES!

SUPER MARIO KART

NINTENDO EAD

■ Originally planned as a two-player *F-Zero*, *Super Mario Kart* effortlessly highlighted the versatility of Nintendo's everyman plumber and helped create a new subgenre.

DESERT STRIKE

ELECTRONIC ARTS

■ Subtitled *Return To The Gulf*, Mike Posehn's lack of videogame experience didn't stop him from crafting a shooter that was as acclaimed as it was controversial.

NIGHT TRAP

DIGITAL PICTURES

■ As ambitious as it is flawed, *Night Trap* might not have elevated early FMV games, but it was instrumental in helping to create gaming's current rating system.

VIRTUA RACING

SEGA AM2

■ Although it wasn't first off the grid, AM2's magnificent polygon-based racer offered a sense of life-like realism that few other racing games could match.

ALONE IN THE DARK

INFOGRAMES

■ Inspired by the works of Edgar Allan Poe and HP Lovecraft, Frederick Raynal's period-based yarn dabbled with survival horror, long before Capcom coined the term.

CHAMPIONSHIP MANAGER

INTELEK

■ Kevin Toms scored first, but the Collyer brothers' own take on the beautiful game found much greater success and rewrote the armchair footballer rulebook.

WOLFENSTEIN 3D

ID SOFTWARE

■ By revitalising a beloved stealth game, id helped lay the blueprints for one of gaming's biggest genres, while also giving the world a mechanically augmented Hitler.

DUNE II: THE BUILDING OF A DYNASTY

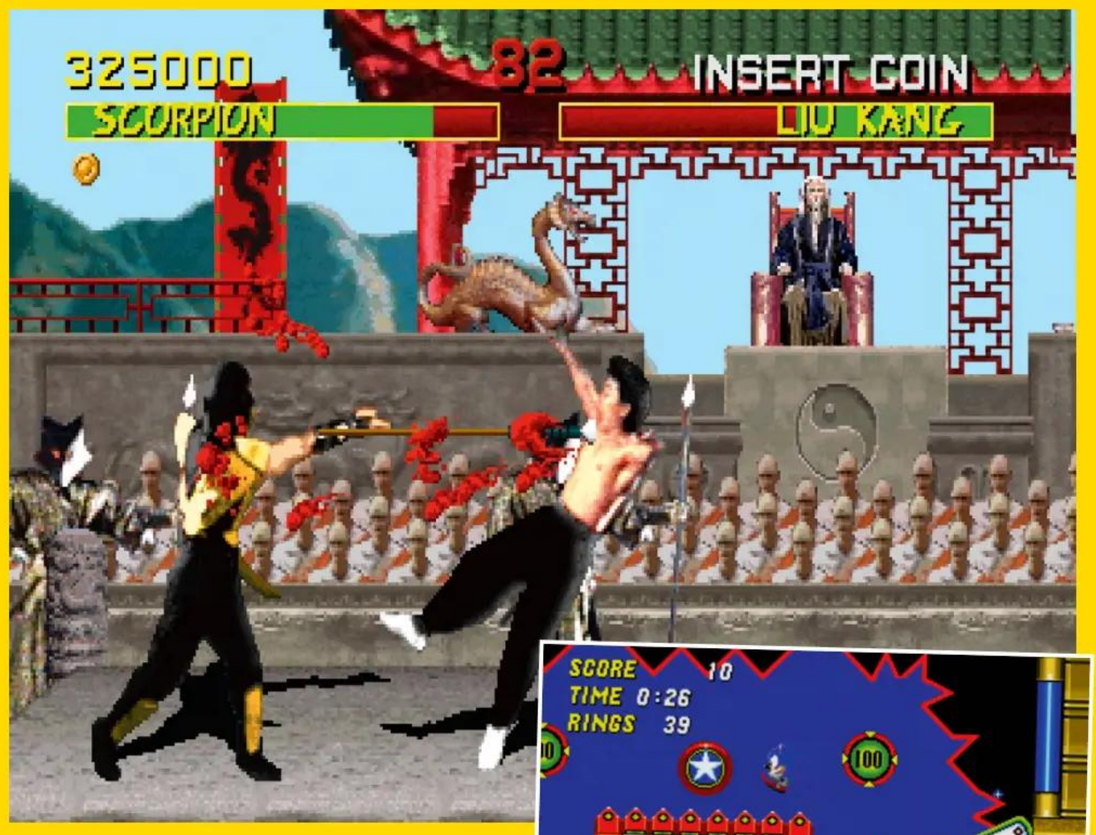
WESTWOOD STUDIOS

■ As influential as the in-game spice your vehicle harvests, Westwood's game laid much of the groundwork for the modern RTS genre, but it wouldn't perfect it…

STREETS OF RAGE 2

SEGA CS2

■ Sega's mighty sequel introduced new characters, new moves and offered a bone-crunching fighting engine that even arcade contemporaries rarely bettered.



» [Arcade] Buckets of blood made *Mortal Kombat* a target of self-appointed moral guardians.

» [Mega Drive] The massive launch of *Sonic The Hedgehog 2* was enough to earn TV news coverage.

1992

Could videogames be harming kids? People genuinely started to ask this question, thanks to the rise of games that combined violent themes with digitised images of real people, such as the arcade hits *Lethal Enforcers* and *Mortal Kombat*. That bloody brawler had plenty of competition from *Art Of Fighting*, *Fatal Fury II* and *World Heroes* as the fighting genre continued to heat up.

1992 was a banner year for fans of point-and-click adventures, thanks to games like *Dune*, *Indiana Jones And The Fate Of Atlantis*, *Lure Of The Temptress* and *Monkey Island 2: LeChuck's Revenge*. Other home-computer hits this year included the shoot-'em-up *Apidya*, *Pinball Dreams* and the mighty *Sensible Soccer*. The next generation Amiga 1200 was also introduced this year (while the ZX Spectrum was officially retired), but by this point the IBM-compatible PC was dominating the computer market.

What's more, this was the year that console games overtook computer games in the UK market. The Mega Drive's strong year included games like *Alisia Dragoon*, Flashback, *Kid Chameleon* and *Ecco The Dolphin* and was capped off with the blockbuster launch of *Sonic 2*. *Contra III: The Alien Wars*, *Super Aleste* and *Super Star Wars* were a few of the titles that delighted SNES owners, while *Dragon Quest V* and *Final Fantasy V* were both making a big splash in Japan.

The Game Boy received the platformers *Super Mario Land 2: 6 Golden Coins* and *Kirby's Dream Land*, while *Shinobi II: The Silent Fury* and *Defenders Of Oasis* were the year's highlights on the Game Gear. Lynx owners enjoyed games like *Toki* and *Switchblade II*. In the world of CD-ROM games, a glut of newly possible FMV-based games proliferated, including *Sewer Shark*, the *Make My Video* series and conversions of Eighties laserdisc arcade games like *Cobra Command*. However, it was *Night Trap* that gained the most attention – once again, by way of controversy over violence.

The popularity of gaming invaded other media as well, with the TV shows *GamesMaster* and *Bad Influence* debuting this year to great acclaim.

TOM ZITO ON THE RISE OF FMV GAMES

"As Andy Warhol wisely noted, "In the future, everyone will be world-famous for 15 minutes." Inversely, Digital Pictures was world-famous for about 15 minutes in the Nineties, simply because we were trying something new: FMV gaming. It was fun while it lasted but, like everyone else, even we realised the gaming limitations imposed by shooting film were incompatible with great gameplay. Hence the demise of the format and, sadly, the company. That said, I'm still amazed and flattered when a random person hears my name and starts to talk about how *Night Trap* changed their life…"

» [Amiga] *The Chaos Engine* was a stellar outing on the 16-bit computers, and later consoles.

» [Mega Drive] Treasure arrived on the scene with the creative, technically masterful *Gunstar Heroes*.

1993

This was arguably the year that CD-ROM games finally started to hit high gear and the new magazines *GamesMaster*, *Edge* and *PC Gamer* were there to cover them. Mac owners got the first taste of *Myst*, while games like *The 7th Guest*, *Star Wars: Rebel Assault* and *Star Wars: X-Wing* sold strongly on the PC. *Batman Returns*, *Final Fight CD* and *Sonic CD* showed that there was more to the Mega-CD than FMV, and the PC Engine Super CD game *Castlevania: Rondo Of Blood* was arguably the best in the series to date.

The console world was starting to become overrun with mascot platformers, with notable examples including *Bubsy In Claws Encounters Of The Furred Kind*, *Aero The Acro-Bat* and Konami's excellent *Rocket Knight Adventures*. Even the venerable 8-bit consoles got some great ones, like *Land Of Illusion* on the Master System and *Kirby's Adventure* on the NES. Fortunately there were plenty of other great games to enjoy – *Gunstar Heroes*, *Ranger-X*, *Shinobi III*, *Jungle Strike* and *Castlevania: The New Generation* on the Mega Drive, and *Super Turrican*, *Super Mario All-Stars*, *Final Fight 2*, *Super Bomberman* and *Plok* on the SNES. Different versions of Disney tie-in *Aladdin* appeared on both machines, both being very good.

Strategy gamers were well catered for on computers between *Master Of Orion*, *SimCity 2000* and *Syndicate*, while adventure fans got to enjoy *Day Of The Tentacle*, *Return To Zork*, *Sam & Max Hit The Road* and *Simon The Sorcerer*. Further hits included *Cannon Fodder*, *The Chaos Engine*, the astonishing Amiga platformer *Lionheart* and the highly ambitious space sim *Frontier: Elite II*. *Mayhem In Monsterland* also delighted loyal C64 owners.

As the year continued, major 8-bit home software died off, the FM Towns Marty and Amiga CD32 repurposed computers into consoles to limited success, while the Atari Jaguar and 3DO both offered 3D games at home – though launch games like *Cybermorph* and *Crash 'N Burn* didn't get them off to the best start. Meanwhile, Namco's System 22 and Sega's tests of the Model 2-powered *Daytona USA* introduced texture-mapped 3D to arcades, heralding a new era of visual fidelity. ▶

TOM HALL ON THE IMPACT OF DOOM

"*Doom* was the end zone of making 3D games for us. We did games like *Hovertank*, *Catacomb 3-D* and *Wolfenstein 3D*. *Doom*, with the new tech, finally textured the whole environment, in apparent 3D, completing the visual experience. It was bizarre to be making a 'new thing' as each decision, weapon choice, level, was genre-defining, by definition. We were working insanely hard, in a self-imposed death-crunch mode of 12-16 hours a day, seven days a week. People had '*Doom* Dreams'. I did. Your dream world WAS the world of *Doom*. It had something special, an internal, dreamlike logic, that persists to this day."

DEFINING GAMES!

VIRTUA FIGHTER

SEGA AM2

■ Home systems offered polygon fighting games first, but they were all beaten into submission by the sheer fluidity and dynamism of AM2's spectacular brawler.

RIDGE RACER

NAMCO

■ *Ridge Racer*'s sensational texture-mapped 3D visuals helped trigger an arcade clash between Namco and Sega's departments that dominated the rest of the decade.

NBA JAM

MIDWAY

■ With its intensive pace, recognisable digitised players and ridiculous number of Easter eggs, Midway's game set a new standard for sport-based arcade games.

MORTAL KOMBAT II

MIDWAY

■ Like Capcom's *Street Fighter II*, Midway's sequel bested its predecessor in every way. It also helped stoke a fierce rivalry between the two games that continues to this day.

STARWING

NINTENDO EAD/ARGONAUT SOFTWARE

■ The introduction of the SNES' Super FX chip let Argonaut greatly expand on its *Starglider* success, and brought popular 3D gaming to 'underpowered' consoles.

ZELDA: LINK'S AWAKENING

NINTENDO EAD

■ A distinct non-Hyrule setting, whimsical characters and inventive dungeons proved that Nintendo's minuscule Game Boy could still offer epic gaming experiences.

MYST

CYAN

■ Nowadays it would be seen as a walking simulator, but back in 1993 *Myst* was a gateway into another world that seemed only possible thanks to CD-ROM technology.

DOOM

ID SOFTWARE

■ *Doom*'s impact was immense, its smart level design and sensational visuals not only reinforced the importance of id Software, but also the fledgling FPS genre.

FIFA INTERNATIONAL SOCCER

EXTENDED PLAY PRODUCTIONS

■ It lacked the pace of *Sensible Soccer*, but an official licence and a distinct isometric viewpoint still pushed EA's series into the videogame Premier League.

DEFINING GAMES!

DONKEY KONG COUNTRY

RARE

■ The pre-rendered visuals, sublime music and polished gameplay of Rare's *Donkey Kong* reboot proved that 16-bit systems could still compete with their 32-bit cousins.

SENSIBLE WORLD OF SOCCER

SENSIBLE SOFTWARE

■ A gigantic career mode, tight controls and a huge management mode turned Sensible's hit into the definitive 2D football game.

SUPER METROID

NINTENDO R&D1

■ An evocative look, haunting score, compelling level design and carefully crafted weapons created a blueprint for a generation of indie developers to build on.

ELDER SCROLLS: ARENA

BETHESDA SOFTWORKS

■ *Arena*'s vast open-world setting, huge number of explorable dungeons and realistic day/night cycle helped make it a believable living world that few games could match.

UFO: ENEMY UNKNOWN

MYTHOS GAMES/MICROPROSE

■ Julian Gollop's strategy epic shook off development difficulties to propel wargaming into the public eye and form a blueprint for other would-be developers.

THE KING OF FIGHTERS '94

SNK

■ SNK dug deep into its vault to create a flexible team-based brawler that not only celebrated its past, but created a template for other studios to follow.

THE NEED FOR SPEED

EA CANADA

■ While it could be considered a four-wheeled take on *Road Rash*, EA's racer stood apart thanks to its licensed cars, smart use of FMV and unrivalled realism.

THEME PARK

BULLFROG PRODUCTIONS

■ Although management-style games had existed long before *Theme Park* came along, none had combined humour, construction and finance juggling in quite the same way.

DONKEY KONG

NINTENDO EAD

■ Nintendo's own Donkey Kong update saw him star in a remake of his arcade hit, which then transformed into a puzzler that led to the later *Mario Vs Donkey Kong* series.

» [PC] *Magic Carpet* demonstrated just how far computers had come in terms of 3D graphics.

» [Arcade] Three years on, the updated *Super Street Fighter II Turbo* could still draw a big crowd.

1994

The arcade fighting game boom reached its apex this year, with *Super Street Fighter II Turbo* and *Mortal Kombat II* going head to head. *Tekken* challenged *Virtua Fighter 2* in the 3D arena, with the likes of *Art Of Fighting 2*, *Samurai Shodown II*, *Darkstalkers*, *The King Of Fighters '94*, *Killer Instinct*, *Primal Rage* and *X-Men: Children Of The Atom* all thrilling fight fans. *Cruis'n USA* and *Virtua Cop* also pushed 3D arcade games forward in the racing and lightgun genres respectively.

This year marked the introduction of widespread videogame age ratings, administered by the ESRB in North America and various national bodies in Europe. SNES hits included *Final Fantasy VI* and, in Japan, *Earthbound*, while Mega Drive players got to enjoy *Sonic 3* and *Sonic & Knuckles*, *Contra: Hard Corps* and *Streets Of Rage 3*. *Earthworm Jim* and *The Lion King* found success on both platforms. *Tempest 2000* and *Road Rash* showed the Jaguar and 3DO respectively in their best light, while the remake of *Donkey Kong* for the Game Boy was a brilliant update.

Commodore's mid-year bankruptcy saw the C64 get discontinued and signalled the last gasps of the Amiga, but games like *Ruff 'N' Tumble* and *Shadow Fighter* still entertained. First-person games like *Doom II*, *System Shock* and *Heretic* on PC, and *Marathon* on Mac continued to achieve success, while *Magic Carpet* advanced the cause of 3D visuals. *TIE Fighter* sated *Star Wars* fans, and *Beneath A Steel Sky* provided a memorable adventure.

The year ended with exciting new console launches in Japan. The Sega Saturn took an early lead with a conversion of *Virtua Fighter*, while the excellent conversion of *Ridge Racer* on Sony's PlayStation also got players revved up. Other formats fared less well – SNK's Neo Geo CD didn't offer fashionable 3D games, but its affordable and accurate versions of arcade hits made it moderately popular. NEC's PC-FX was an underpowered bust, and Sega's ill-conceived Mega Drive 32X add-on just confused players.

KEITH HAMILTON ON DESIGNING VIOLENT GAMES

"Violence was not an objective in itself in development – we focussed entirely on making the game fun. In an open virtual world, though, virtual violence naturally emerged as something that players enjoyed. Violence doesn't go unpunished in *Grand Theft Auto* – it raises your Wanted level, attracting the police, making it harder to complete missions. The whole thing was intentionally tongue-in-cheek, inspired by films and TV shows of the time from *The Dukes Of Hazzard* and *The Italian Job* to *Die Hard With A Vengeance* and *Scarface* – but delivered in a cartoonish, exaggerated way that was inspired by Eighties videogames."

» [PlayStation] *Destruction Derby* was a chaotic demonstration of what Sony's new hardware offered.

» [SNES] *Yoshi's Island* reminded the open-minded that 3D certainly wasn't everything.

1995

As the NES was retired in the West, the PlayStation and Saturn made their way to international audiences this year, and brought with them plenty of fantastic new 3D games. Sony's machine gave us *Jumping Flash!*, *Destruction Derby*, *Battle Arena Toshinden* and *Twisted Metal*, while Sega gave us *Bug!*, *Clockwork Knight 2* and some amazing arcade conversions. Though less fashionable, great-looking 2D games like *Rapid Reload* and *Astal* also appeared on the PlayStation and Saturn respectively.

The arcades provided a steady supply of 3D games too, many of which would make their way to the new consoles – *Fighting Vipers*, *Sega Rally Championship* and *Virtua Cop 2* to name a few. Plenty more didn't though, or at least not for many years, such as *Gunblade NY*, *Rave Racer* and *Virtua Striker*. A lack of polygons didn't necessarily mean players would stay away though, as games like *Mortal Kombat 3*, *Puzzle Bobble 2* and *Street Fighter Alpha* proved.

PC gamers were enjoying the 3D revolution too, thanks to the likes of *Flight Unlimited* and *MechWarrior 2*. Strategy fans could enjoy the real-time *Warcraft II: Tides Of Darkness* or the turn-based *Heroes Of Might And Magic*, while *Hexen: Beyond Heretic* and the omni-directional *Descent* further developed first-person shooters. *Full Throttle*, *The Dig* and *I Have No Mouth, And I Must Scream* captivated fans of adventure games, while the highly graphic, FMV-heavy horror adventure *Phantasmagoria* may have made them lose their lunch.

The older machines struggled to attract attention in that climate, but still had plenty to offer. *Alien Soldier*, *Ristar* and *Toy Story* are among the most impressive Mega Drive games ever, and the same goes for *Yoshi's Island*, *Donkey Kong Country 2: Diddy's Kong Quest* and the Japanese release *Terranigma* on the SNES. *Alien Breed 3D* and *Pinball Illusions* kept AGA Amiga owners busy, while Atari's Lynx signed off with *Battlezone 2000* and *Super Asteroids & Missile Command*.

MARTIN EDMONDSON ON THE IMPORTANCE OF SONY'S PLAYSTATION

"For me, seeing the Playstation for the first time, even in its pre-development guise, the size of a huge photocopier, it was clearly going to be transformational. It was like a huge creative roadblock had been lifted and we could imagine all sorts of new ideas and immersive game possibilities. 3D was something that was previously possible to a very limited extent of course, but this was fast, fluid, visually realistic and aimed at the masses. And crucially it was very easy to program, within a day we had a textured object spinning on the screen. Everything previous had felt evolutionary, but this was revolutionary. Exciting times I'll never forget."

DEFINING GAMES!

STAR WARS: DARK FORCES

LUCASARTS

So much more than just another '*Doom* clone', *Dark Forces* married state-of-the art tech with a rich narrative to build the genre's first truly immersive world.

PANZER DRAGOON

TEAM ANDROMEDA

It may have been on-rails but the dystopian setting and breathtaking score for Team Andromeda's shooter gave it an otherworldly atmosphere few games could match.

CHRONO TRIGGER

SQUARE

A rich story, memorable characters, gorgeous music and neat time-travel mechanics highlighted that 16-bit systems could still offer deep, immersive experiences.

COMMAND & CONQUER

WESTWOOD STUDIOS

Westwood's *Dune II* may have innovated, but it was the studio's follow-up that arguably refined those innovations and paved the way for the genre to flourish.

TEKKEN 2

NAMCO

In addition to adding new characters and improved visuals, Namco's sequel placed the foundations for the mechanics that would define the series for years to come.

RAYMAN

UBI PICTURES

Michel Ancel's quirky and colourful platformer spawned a successful series and proved that 2D games could still compete in a world obsessed with 3D graphics.

TIME CRISIS

NAMCO

A smart cover system and cutting-edge visuals saw *Time Crisis* dominate arcades in the mid-Nineties. It would repeat the same trick later on Sony's PlayStation.

WORMS

TEAM17

Andy Davidson's idea to combine cute annelids with over-the-top weaponry refreshed the *Artillery* subgenre and paved the way for an epic number of sequels.

WIPEOUT

PSYGNOSIS

WipEout's hypnotic soundtrack, stylistic, futuristic setting and challenging track design set a standard that countless developers tried to emulate.

DEFINING GAMES!

SUPER MARIO 64

NINTENDO EAD

■ Need proof of *Super Mario 64*'s importance? Look at the many platformers that followed and failed to emulate its success. Mario made the jump to 3D look easy.

TOMB RAIDER

CORE DESIGN

■ This classic Core release didn't just have cavernous levels, an immense sense of scale and stunning aesthetics, it also featured a heroine that would transcend her own game.

RESIDENT EVIL

CAPCOM

■ Shinji Mikami's survival horror epic highlighted the continuing maturity of console games, and sowed the seeds for a string of terrifically terrifying sequels.

POKÉMON RED & GREEN

GAME FREAK

■ A desire to explore and capture weird little critters and let them loose in one-on-one battles created a cultural phenomenon and a string of copycat clones.

PARAPPA THE RAPPER

NANA-ON SHA

■ The combo of developer Masaya Matsuura and artist Rodney Greenblat led to a fusion of art and sound that laid the foundations for the rhythm action subgenre.

QUAKE

ID SOFTWARE

■ Extensive multiplayer options and sensational graphics saw id Software redefine the first-person shooter and set new standards that evolved the genre.

NIGHTS: INTO DREAMS

SONIC TEAM

■ It may be a simple score-attack game at its heart, but Sonic Team's gorgeous Saturn release remains a brilliant jewel of creativity that's never been bested.

WAVE RACE 64

NINTENDO EAD

■ We'll obviously mention *Wave Race 64*'s stunning water physics, but its meticulous controls, challenging AI and great track design also made it a standard bearer.

METAL SLUG

NAZCA CORPORATION

■ As developers continued to push polygons in arcades, Nazca hit back with an outrageous pixel-art shooter that was as gorgeous to look at as it was tough to play.

» [Nintendo 64] The 3D worlds in games like *Pilotwings 64* felt like a huge step forward.

» [Arcade] *Scud Race* looked like absolutely nothing else back in the mid-Nineties

1996

The long-awaited Nintendo 64 arrived in Japan and North America, and brought with it some expertly crafted 3D games – not just the widely celebrated *Super Mario 64*, but games like *Pilotwings 64* and *Mario Kart 64*. Despite that, Nintendo hadn't abandoned the SNES, sending it off with a strong line-up of games including *Super Mario RPG*, *Kirby's Fun Pak*, *Donkey Kong Country 3* and an astonishing conversion of *Street Fighter Alpha 2*.

Sega's commitment to the Mega Drive wasn't as strong, with *Sonic 3D: Flickies' Island* being the most notable release of the year. Sega also retired the Master System in Europe. However, the Saturn received some great games including *Guardian Heroes*, *Panzer Dragoon II Zwei* and *Dragon Force*. The PlayStation pulled ahead of the competition thanks to the likes of the superb platformer *Crash Bandicoot*, *Formula 1*, *WipEout 2097* and *Twisted Metal: World Tour*, supported by cult favourites like the RPG *Revelations: Persona*. Meanwhile, The 3DO Company transitioned out of hardware and Atari transitioned out of gaming altogether, discontinuing the Jaguar and merging its operations with a hard-disk manufacturer.

Over on the PC, first-person shooters were decidedly in vogue. *Duke Nukem 3D* incorporated plenty of humour, id Software supplemented *Quake* with *Final Doom* and *Terra Nova: Strike Force Centauri* was critically successful but commercially unprofitable. Virgin's *Command & Conquer: Red Alert*, *Heroes Of Might & Magic II* and *Master Of Orion II* made for a trio of excellent strategy sequels, and BioWare debuted with *Shattered Steel*, a mech simulator.

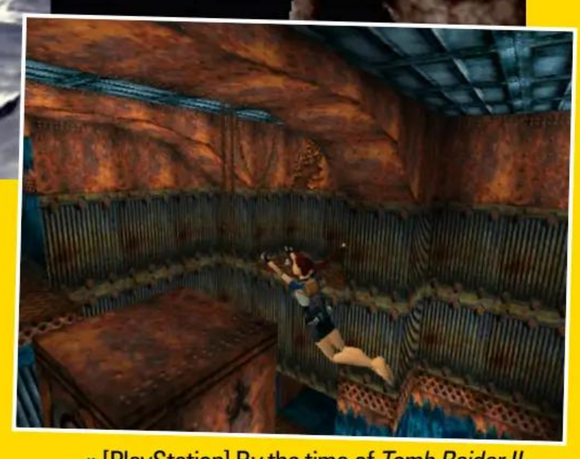
In the arcades, *Virtua Fighter 3* and *Scud Race* on Sega's Model 3 board pushed the boundaries of graphics technology, but at an exceptionally high cost. *Dead Or Alive* and *X-Men Vs Street Fighter* were favoured by the fighting fraternity, *GTI Club*'s multi-route racing was top notch and *Neo Turf Masters* was a surprisingly thrilling golf game. The most striking cabinet of the year, though? That was Namco's pedal-powered *Prop Cycle*, a flying-bike score-attack game.

GAVIN RUMMERY ON THE RISE OF 3D

"Although there were some pioneering 3D games on PC, it wasn't until the arrival of the first 3D consoles in the mid-nineties that 3D gaming really took off. This is because they had the dedicated 3D hardware, whilst around this time the first wave of GPUs for PCs started to appear. The switch from 2D to 3D games represented a huge leap in what could be done with entirely new genres like FPSes and adventures like *Tomb Raider* becoming possible. But with this came new challenges around 3D collision detection, 3D cameras, and 3D avatar controls in general. It was an innovative time that produced many of the franchises that live on today."

[Arcade] The relentless zombies in *The House Of The Dead* can be literally shot to pieces.

1997



» [PlayStation] By the time of *Tomb Raider II*, Lara Croft was already becoming a megastar.

The PlayStation went from strength to strength in 1997, with original games like *Oddworld: Abe's Oddysee* and space combat sim *Colony Wars* mingling with blockbuster sequels like *Formula 1 97*, *Crash Bandicoot 2: Cortex Strikes Back* and *Tomb Raider II*. These major releases were bolstered by cult favourites like the platformer *Klonoa: Door To Phantomile*, *Mega Man Legends*, *Einhander*, *Kurushi* and *Breath Of Fire III*, as well as budget re-releases of older favourites via the newly introduced Platinum range.

Not to be outdone, the N64 was home to hot sequels like *Star Fox 64* and *Yoshi's Story*, as well as memorable original games like the first-person shooter *Turok: Dinosaur Hunter*, the adventure kart racer *Diddy Kong Racing* and the demolition action game *Blast Corps*. Though the Saturn received fine games like *Last Bronx*, *Sonic R*, the snowboarding game *Steep Slope Sliders* and the Japanese RPG *Grandia*, Sega's fortunes continued to slide.

In the arcades, *Time Crisis II* added the fun of two-player action, while rival lightgun games *The Lost World* and *The House Of The Dead* opted for deadly dinosaurs and gallons of gore respectively. A new trend of more unusual large-scale ride-on games also emerged, with games like *Final Furlong*, *Rapid River*, and *Top Skater* allowing players to try horse racing, white-water rafting and skateboarding. *Tekken 3* and *Mortal Kombat 4* also entered arcades this year.

Over on the PC, more major sequels arrived, including *Quake II*, *X-Wing Vs TIE Fighter*, *The Curse Of Monkey Island* and *Riven*, the follow-up to *Myst*. *Postal* courted controversy with its theme of wanton murder, which gave it plenty in common with *Carmageddon* – a game that was ultimately censored with zombies replacing human victims. *Interstate 76*, another combat racer, was rather less controversial. *Age Of Empires* made its mark on the strategy scene and the third-person shooter *MDK* showed that Shiny Entertainment could do more than just platform games.

CHRIS SCHILLING ON GAME COMPLEXITY

"Complex games did exist in the 16-bit era, though they tended to be the preserve of computers rather than consoles. It was the fifth generation of consoles, heralding the arrival of the 3D era, that was the major factor in encouraging developers to offer deeper and more complicated games. Controllers with sticks and buttons meant a greater range of player inputs, also allowing designers to dream a little bigger. And, ushered in by the PlayStation's more adult-focussed marketing, the medium was beginning to reach a broader audience, with older players in particular ready for more sophisticated gaming experiences."

DEFINING GAMES!

FINAL FANTASY VII

SQUARE

■ Spanning three CD-ROMs, Square's gargantuan JRPG arguably did more to introduce the West to the delights of the popular genre than any other game before it.

DIABLO

BLIZZARD NORTH

■ While its sequel would improve on it in a number of ways the original *Diablo* still made huge progressive leaps for the action RPG genre at the time of its release.

GOLDENEYE 007

RARE

■ Rare's progressive and inventive FPS not only proved that consoles could capably match their PC counterparts, but could also teach them a thing or two as well.

CASTLEVANIA: SYMPHONY OF THE NIGHT

KONAMI COMPUTER ENTERTAINMENT TOKYO

■ It may have floundered commercially, but Konami's genre-pushing 2D adventure has certainly had the last laugh and remains the highlight of the acclaimed series.

DUNGEON KEEPER

BULLFROG PRODUCTIONS

■ Trust Bullfrog to come up with a novel take on a popular genre and sprinkle it with the sort of magic that meant even its sequel struggled to match its appeal.

GRAN TURISMO

POLYPHONY DIGITAL

■ Polyphony's attention to realism delivered a driving simulator that set new standards and demonstrated the added complexity of single-player experiences.

GRAND THEFT AUTO

DMA DESIGN

■ Its story may have followed a linear structure, but *GTA*'s fusion of freedom, violence and exploration created a recipe for mayhem that catapulted it to success.

FALLOUT

INTERPLAY PRODUCTIONS

■ Like *Wasteland* before it, *Fallout* forged its own path, ditching conventional RPG mechanics for a smart Action Point system and extensive character development.

DODONPACHI

CAVE

■ While Jun'ya Ota's *Touhou Project* infiltrated Japanese PCs, CAVE lit up arcades with an astonishing sequel that took bullet hell to a spectacular new level.

DEFINING GAMES!

ZELDA: OCARINA OF TIME

NINTENDO EAD

Return
You found the Ocarina of Time!
This is the Royal Family's hidden treasure which Zelda left behind.
It glows with a mystical light...

■ It feels small today, but *Ocarina*'s traversable world felt incredibly complex in 1998, while its innovative targeting system made its way into countless games.

HALF-LIFE

VALVE SOFTWARE

■ Valve's debut game revolutionised the first-person shooter, made an icon of its silent hero and proved the genre could deliver deep, immersive storytelling.

METAL GEAR SOLID

KONAMI COMPUTER ENTERTAINMENT JAPAN

■ Filled with masterful flourishes, clever ideas and movie-like direction, Hideo Kojima's 3D entry in the *Metal Gear* series redefined stealth gaming on consoles.

RESIDENT EVIL 2

CAPCOM

■ Capcom turned everything up to 11 for its ambitious sequel, delivering an expansive, challenging game that helped rewrite the survival horror rulebook.

BANJO-KAZOOIE

RARE

■ The inventive pairing of Banjo and Kazooie to create distinct special moves proved that Nintendo weren't the only studio to master 3D platforming.

THIEF: THE DARK PROJECT

LOOKING GLASS STUDIOS

■ *Thief*'s focus on emergent gameplay, clever AI and inventive use of light and sound as game mechanics meant it pushed the stealth genre in its own unique ways.

DANCE DANCE REVOLUTION

BEMANI

■ *Dance Dance Revolution* revolutionised the concept of marrying popular music to exotic arcade cabs by turning the player themselves into a living controller.

BALDUR'S GATE

BIOWARE

■ As well as revitalising the Western computer RPG, *Baldur's Gate* proved once and for all that *D&D*'s complex rules system could easily find a home on PCs.

STARCRAFT

BLIZZARD ENTERTAINMENT

■ *StarCraft*'s skill in combining in-depth narrative with complex and completely unique factions and creative Technology Trees set new standards for the RTS genre.

» [PlayStation] The wizard's in his underwear, but *Crash Bandicoot 3* is anything but pants.

» [Dreamcast] *Sonic Adventure* was a spectacular demonstration of what Sega's new console could do.

1998

It's said that 1998 is one of gaming's best years ever, and it was definitely packed with fantastic releases – just look at PlayStation games like *Crash Bandicoot 3: Warped*, *Parasite Eve*, *Spyro The Dragon*, *Colin McRae Rally*, *Tomb Raider III* and *R4: Ridge Racer Type 4*. Any of them could easily sit in the column to the left in some years, and that's saying nothing of impressive arcade conversions like *Tekken 3* and *Beatmania*.

N64 fans got to enjoy games like *1080° Snowboarding*, *Turok 2: Seeds Of Evil*, *F-Zero X*, *Mario Party* and *International Superstar Soccer '98*. On the PC, the classic adventure *Grim Fandango*, the tank combat revival *Battlezone* and first-person shooter *Unreal* all impressed. The Saturn was even able to go out on a high with games like *Burning Rangers*, *Panzer Dragoon Saga*, and the Japanese hits *Sakura Wars 2* and *Radiant Silvergun*.

Turn your attention to the arcade scene, and awesome racing games like *Daytona USA 2*, *Sega Rally 2* and *Thrill Drive* were just as spectacular as other special attraction cabinets like *Star Wars Trilogy Arcade* and *The House Of The Dead 2*. There are delightful oddities like *Tech Romancer*, 2D fighting classics like *The King Of Fighters '98*, *The Last Blade 2* and *Marvel Vs Capcom*, and even *Tetris: The Grand Master* for hardcore puzzle fans. No matter what you played, 1998 was just amazing.

The later months of the year saw another hardware shake-up. The Game Boy Color finally brought Nintendo's handhelds out of the greyscale age, with colourised updates *Wario Land II*, *Tetris DX* and *The Legend Of Zelda: Link's Awakening DX* serving as key early games. That arrival stuffed SNK and its new black and white Neo Geo Pocket handheld. Sega launched its new online-capable Dreamcast home console in Japan too, with *Virtua Fighter 3tb* and *Sonic Adventure* doing the most to put machines in homes.

PAUL DAVIES ON WHETHER 1998 REALLY IS THE BEST YEAR EVER

"Every generation gets its 'best ever year for games'. Who here remembers 1981?! *Donkey Kong*, *Scramble*, *Gorf*, *Defender* and *Tempest*. The arcade scene was exploding at that time. A decade later, to play at home, *The Legend of Zelda: A Link To The Past*, *Super Tennis*, *Super Castlevania IV*, *Sonic the Hedgehog*, *Streets of Rage*… all mind-blowing, undisputed classics. The thrill of the late-Nineties, and 1998 as a shining example of this was owed, in my opinion, to the success of PlayStation. What Sony's console did best, versus what the other platforms did differently or better to stand out. The audience was growing, more diverse, and publishers were learning how to capitalise on all this fast."

» [PlayStation] *Final Fantasy VIII*'s American release was timed to coincide with the Dreamcast's launch.

1999

» [PC] *Quake III Arena* was far more focussed on online multiplayer than its predecessors had been.

Though the PlayStation hit its fifth anniversary in 1999, it showed no signs of slowing down – *Tony Hawk's Pro Skater* revolutionised extreme sports games, *Syphon Filter* expanded on the growing stealth genre and *Ape Escape* helped to establish dual analogue controls as the new standard. Then there's the small matter of *Final Fantasy VIII*, another epic RPG with incredible production values.

The Dreamcast arrived in homes around the world, and brought with it the *NBA 2K* and *NFL 2K* franchises, as well as games like *Power Stone*. 1999's arcade hits, like *Dead Or Alive 2*, *F355 Challenge*, *Garou: Mark Of The Wolves*, *Silent Scope* and *Virtua Tennis* provided glimpses into the console's future. On the N64, *Super Smash Bros*, *Pokémon Snap* and *Donkey Kong 64* all earned plaudits. PC gamers could experience the joys of *RollerCoaster Tycoon*, the RPG delights of *Planescape: Torment* and Sid Meier's 4X strategy game *Alpha Centauri*.

The Japanese launch of *Pokémon Gold* and *Silver* did plenty to shift more Game Boy Color hardware, with *Super Mario Bros Deluxe* and *Mario Golf* providing solid platform and sports options. However, Nintendo's dominance in the handheld arena wasn't unchallenged. SNK's Neo Geo Pocket Color had *SNK vs Capcom: Card Fighters Clash* and fantastic handheld versions of *Metal Slug* and *The King Of Fighters*, while the greyscale Bandai WonderSwan's signature game was *Gunpey*.

As the decade drew to a close, 3D worlds were expanding in scale and complexity, with *Driver* on the PlayStation, *Midtown Madness* on PC and *Crazy Taxi* in the arcades all providing large environments to drive around without any pauses for loading. Online multiplayer games were also becoming more prominent, both on the PC with games like *Quake III Arena* and *Age Of Empires II: The Age Of Kings*, and on consoles with offerings like *Chu Chu Rocket!*. If you wanted an indication of where gaming would go in the new millennium, these were the trends to watch. ✱

MINH LE ON THE EXPLOSION OF ONLINE MULTIPLAYER GAMES

"My first multiplayer PVP experience was with the original *Doom*. I remember how incredibly novel it was to be able to play against another human player. It offered an experience unlike any single-player game could offer because of how unpredictable it felt. From that point on, the game industry shifted and we saw an onslaught of multiplayer titles flood the market. Some of my favourites were all of the *Doom*/*Quake* games, as well as the entire library of 3D Realms games such as *Blood*, *Duke Nukem* etc. Online games really shifted the industry and kick-started the careers of many aspiring game developers like myself."

DEFINING GAMES!

SYSTEM SHOCK 2

IRRATIONAL GAMES/LOOKING GLASS STUDIOS

■ A hybridisation of genres, atmospheric setting and clever ways of telling its narrative led to critical acclaim and influencing the likes of *BioShock* and *Prey*.

PLANESCAPE: TORMENT

BLACK ISLE STUDIOS

■ *Planescape*'s terrific writing, complex characters and masterful storytelling set a new standard of excellence for *D&D* adaptations and Western RPGs in general.

MEDAL OF HONOR

DREAMWORKS INTERACTION

■ Conceived by Stephen Spielberg, this hit FPS offered unrivalled realism and authenticity within the genre and led to the direct creation of Activision's *Call Of Duty*.

SOULCALIBUR

NAMCO

■ In addition to having sensational graphics that massively outshone its arcade parent, Namco's Dreamcast brawler also delivered a stunning array of new game modes as well.

SHENMUE

SEGA AM2

■ While Yu Suzuki's opus could never match the ambition of its creator, it still delivered an unparalleled sense of realism that no game of the time could match.

UNREAL TOURNAMENT

EPIC GAMES

■ Epic's sequel easily highlighted the versatility of its Unreal engine and cemented the team's proficiency at crafting intense multiplayer-focussed experiences.

TONY HAWK'S PRO SKATER

NEVERSOFT

■ Though eclipsed by its sequels, the robust physics, standout soundtrack and varied challenges of Neversoft's game led to extreme sports games being everywhere.

COUNTER-STRIKE

VALVE

■ After starting life as a multiplayer mod for *Half-Life*, *Counter-Strike* received an offical retail release in 2000 that led to huge global sales and the first esports league.

EVERQUEST

VERANT INTERACTIVE

■ As well as expanding what an MMORPG could be, *Everquest* was infamous for issues like addiction and sales of in-game items, which are still problematic today.

THE MAKING OF SONIC THE HEDGEHOG 3 + SONIC & KNUCKLES

IN THE KNOW

- **PUBLISHER:** SEGA
- **DEVELOPER:** SEGA TECHNICAL INSTITUTE
- **RELEASED:** 1994
- **PLATFORM:** MEGA DRIVE
- **GENRE:** PLATFORMER

IN 1993, SEGA HAD A PROBLEM – EVEN WITH SONIC SPEED, IT COULDN'T FINISH ITS STAR'S MOST AMBITIOUS ADVENTURE ON TIME. THE SOLUTION? A PROJECT SO AMBITIOUS THAT IT HAS NEVER BEEN REPLICATED. SONIC TEAM'S TAKASHI IIZUKA TELLS US HOW IT WAS DONE

WORDS BY NICK THORPE

» [Mega Drive] This infamous object requires you to move the d-pad to move it, but that's not obvious.

DEVELOPER HIGHLIGHTS

SONIC THE HEDGEHOG 2
SYSTEM: MEGA DRIVE
YEAR: 1992

SONIC SPINBALL
SYSTEM: MEGA DRIVE
YEAR: 1993

COMIX ZONE (PICTURED)
SYSTEM: MEGA DRIVE
YEAR: 1995

***Sonic The Hedgehog 2* was a game that really redefined the standards for a blockbuster videogame release – its extravagant hype campaign and co-ordinated international release were very uncommon at the time, but they paid dividends for Sega as the game sold millions of copies worldwide.** But the creation of that game was fraught – a large number of concepts were scrapped outright, a prototype cartridge was stolen from a toy fair in New York and major changes were still being made during the final week of development. One of the big problems was the choice to develop the game at Sega Technical Institute in the USA, with a mixed Japanese and American development team – in **Retro Gamer** 175, game designer Hirokazu Yasuhara told us that, "Trying to establish a multicultural development team was meaningful, but it should not be done for a project with a very tight schedule."

The result was that while *Sonic* development continued at STI, the American developers would split off to work on *Sonic Spinball*, while *Sonic The Hedgehog 3* was developed at Sega Technical Institute in the USA with almost exclusively Japanese staff. Key returning staff from *Sonic 2* included Yuji Naka, now a producer as well as lead programmer, Hirokazu Yasuhara, credited as director as well as senior game designer, and senior programmer Masanobu Yamamoto. Takashi Iizuka, today the *Sonic* series producer at Sonic Team, came on board as a senior game designer having previously worked on *Golden Axe III*. "I was living outside of Japan for the first time during *Sonic 3*'s development, so it was one culture shock after another on a daily basis for me," he recalls. "I hadn't even heard of Halloween before, so it was really surprising to see everyone at STI sitting down for serious meetings while dressed up in costumes."

Just like *Sonic 2*, the third main game was also subject to major time pressures – in part because of experimental work that the team did during early development. Feeling that the previous game had already come close to the limits of the Mega Drive, *Sonic 3* was originally slated to use the same enhancement chip as *Virtua Racing*. Speaking to Japan's *Sega Magazine* in 1997, with translation from shmuplations.com, Yuji Naka said, "Up till about June of 1993, the *Sonic 3* development included the SVP. It featured isometric 3D graphics, and you could rotate and turn the game field." Of course, this design was scrapped, with Naka continuing, "Unfortunately, in June we realised that development of the SVP chip probably wouldn't be finished by the end of the year. So we abandoned all the programming and ▶

» Takashi Iizuka, *Sonic* series producer at Sonic Team.

» [Mega Drive] Here comes Knuckles, in one of his trademark ambushes on Sonic and Tails.

[Mega Drive] The burning of Angel Island Zone makes for a dramatic transition in the game's opening moments.

> "SONIC'S PLAYSTYLE WAS HORIZONTAL, WHILE KNUCKLES' CLIMBING AND GLIDING ALLOWED US TO BRING IN VERTICAL PLAY"
> **TAKASHI IIZUKA**

work we'd done up to then. In the remaining six months we had for *Sonic 3*, we had to start entirely from zero and re-do everything."

Virtua Racing ultimately launched just six weeks after *Sonic The Hedgehog 3*, but in that interview, Naka claimed that meeting a February 1994 release date was crucial because Sega had entered into a $20 million promotional deal with McDonald's for that month. Takashi Iizuka confirms that "it wasn't realistic to change that" promotion to coincide with a slightly later release, but also he offers a different reason for the abandonment of the enhancement chip, telling us, "Support for the SVP chip was nothing more than a research experiment to see if we could get Sonic moving in 3D. In the end we found that it could only handle a polygon count similar to *Virtua Racing*, so we decided that it wasn't a good fit for a *Sonic* game."

Regardless of the precise reasoning for abandoning the SVP chip, the result was the same – by June 1993, there was a tight deadline to meet and no substantial work done. The team would settle on revisiting the tried-and-true platform design. "We wanted to make *Sonic 3* more epic than *Sonic 2*," says Iizuka. "Specifically, that meant strengthening the story elements, adding uniqueness to the Act 1 and 2 pairs, adding a new playable character, expanding each stage, adding new routes for each character and enhancing 2P versus play." Some of these enhancements were very straightforward. Distinct musical arrangements and subtle background changes helped to differentiate Act 1 from Act 2 of each stage, as did the addition of more bosses. "We didn't want Act 1 and Act 2 to feel too repetitive, but rather have each reach its own peak. Act 2 featured battles with Dr Eggman [Robotnik], so for Act 1 we created battles against just his robots, spicing up the fun when it came to boss battles," Iizuka recalls.

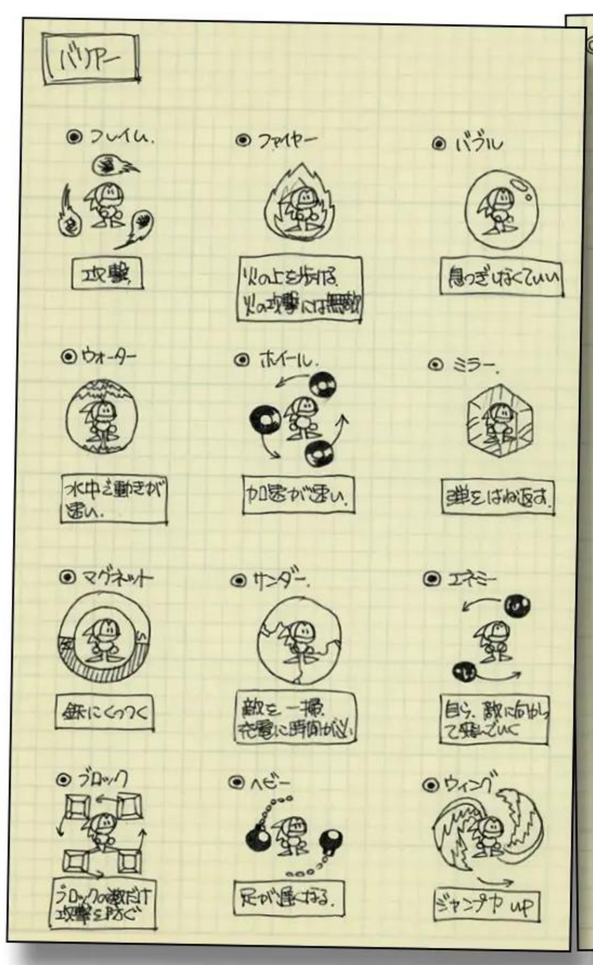
The new playable character was Knuckles, designed by Takashi Yuda. "We wanted to create a character of a similar size and stature to rival Sonic beyond the Mecha Sonic and Metal Sonic characters of the previous games. Those characters were very cool, but Knuckles let us create an antagonist where we could really shape his personality and take on the journey that we did," says Iizuka. "As for his abilities, we were always keen to explore how alternative gameplay mechanics and traversal could make an impact on *Sonic*'s traditional level design, and we felt that his ability to glide and climb gave players new ways and reasons to play each zone."

» [Mega Drive] An aerial boss battle in which Tails carries Sonic was a brand-new concept for *Sonic 3*.

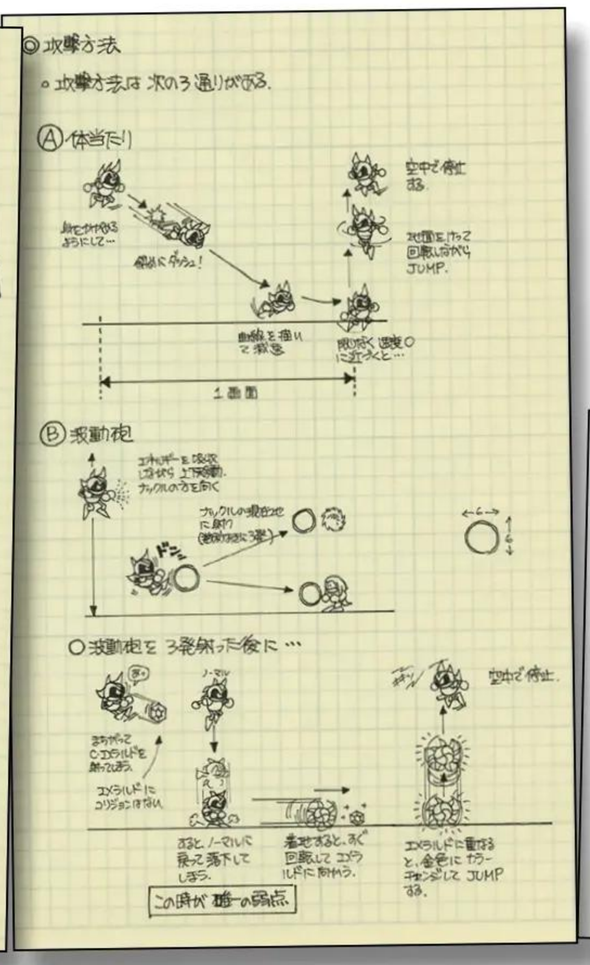
» [Mega Drive] Swimming is very helpful to Tails – that Robotnik monitor rather less so.

Those abilities actually gave *Sonic 3*'s level designs a whole new shape. "Knuckles' ability to punch through rocks allowed us to create routes that only he could use," Iizuka explains. "Sonic's playstyle was horizontal, while Knuckles' climbing and gliding allowed us to bring in vertical play. He allows for different experiences from Sonic, such as climbing walls to find secret areas or gliding between walls to navigate a way upward." Even if you're not playing as Knuckles, this is apparent. *Sonic 3*'s stages are massive, sprawling things compared to those of previous games, with designs that are up to twice as tall as those featured in *Sonic 2*. *Sonic 3* increased the use of vertical wrap-around in its stages compared to *Sonic 2*, allowing for more stages with a feeling of even greater height.

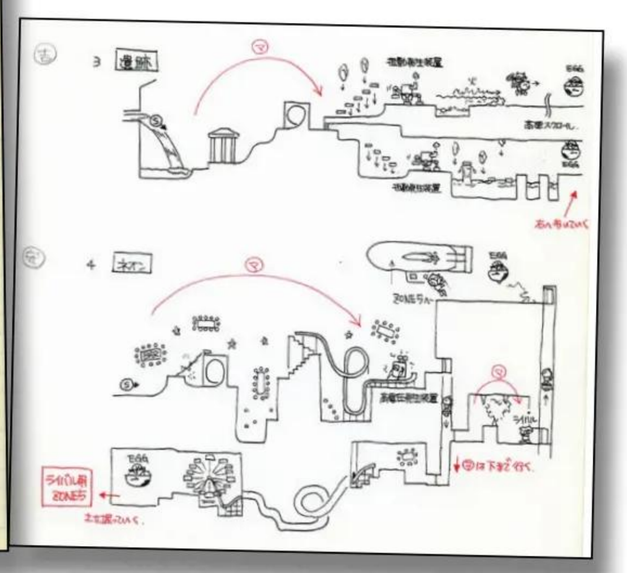
Adding Knuckles also aided the storytelling aspect of the game, giving an extra dimension to the plot. "We had the idea from the beginning that Knuckles would first be an enemy but later become playable. So we worked Knuckles into the story and had him appear as an enemy from the outset," Iizuka recalls. The first two games had used short in-engine scenes to depict key events and that technique was expanded here – Knuckles managed to dispossess Sonic of the Chaos Emeralds in the game's intro, and showed up frequently in scripted



» Some shield concepts, like Magnet and Lightning, ended up being merged together.



» Here's a concept document showing various attack patterns that Mecha Sonic could potentially use.



» This drawing shows the game flow, including Carnival Night Zone's lost transition to Flying Battery Zone.

KNOCK KNOCK, IT'S KNUCKLES

TAKING A CLOSER LOOK AT SONIC'S FEISTY FOE-TURNED-FRIEND

Knuckles is one of the most popular characters in the *Sonic* cast, as fans instantly took to his rough-and-ready demeanour and cool abilities. He's one of just a few *Sonic* characters to have been given his own starring roles, including the 32X game *Knuckles Chaotix*, various comics and the forthcoming Paramount Plus series *Knuckles*, a spin-off of the *Sonic* movies in which Idris Elba will reprise his role as voice actor. Here's what makes the red echidna tick.

■ Knuckles takes guarding Angel Island and the Chaos Emeralds seriously, but being the last survivor of his civilisation, he's socially naive and has been easily misled by Robotnik a few times.

■ These spines aren't just fashionable – they're the secret to Knuckles' ability to glide, allowing him to cross long distances that Sonic can't. Occasionally, they're referred to as dreadlocks.

■ Character designer Takashi Yuda has said that this white mark on Knuckles' chest was included when a collaboration with a certain footwear manufacturer was under consideration.

■ These are hands you don't want to catch – Knuckles has major punching power and can smash rocks with ease. He can also use them to climb walls, and in later games, dig into the ground.

■ Though Knuckles would never skip leg day, he's not quite as fast as Sonic. He also can't jump as high, so certain boss battles in the classic 2D games are adjusted to compensate.

» [Mega Drive] Sonic's new Insta-shield is perfect for defeating otherwise impossible enemies.

» [Mega Drive] Climbing gives Knuckles easy access to places that even Tails' flight can't reach.

» [Mega Drive] Grab the right one, or prepare yourself for a nasty jab in the backside.

▶ ambushes from there on. Just like the story scenes in the prior games, *Sonic 3*'s story scenes were designed not to use text or voice acting. "As *Sonic* is an action game played all around the world, we didn't want to use text to tell the story, but thought of ways to make cutscenes that could be followed visually," Iizuka explains. "It was very difficult to express the scene of Knuckles actually having been deceived by Dr Eggman without using any text."

> "I REMEMBER THINKING THE LOCK-ON CARTRIDGE WAS AN INSANE IDEA!"
> **TAKASHI IIZUKA**

Magazine previews mentioned a "helper mechanic" in which Tails could provide aid to Sonic – something later seen in a prototype discovered in 2019, but which ultimately fell by the wayside. "Just like every gameplay feature decision, we try things, see how they feel, test them and if they don't add to the gameplay experience then we don't see them as necessary as a final game feature," responds Iizuka when asked about it. "We felt this might detract from the overall player experience with Sonic so it didn't make it into the final game." That decision didn't stop Tails from helping out though – players were given the ability to control him while flying, and Sonic could grab hold of him for an airlift to higher places during co-op play. Tails also gained the ability to swim, but wasn't strong enough to carry Sonic while doing so.

For Sonic, the team experimented with a variety of new techniques including a move that is coincidentally close to the Drop Dash from *Sonic Mania*, which was discovered in a *Sonic 3* prototype found in 2019. However, the other characters showed the way for Sonic's newest trick. "As you know, up until *Sonic 2* you could control your character using only the jump action. But to add the flight action for the newly added Knuckles and Tails, it was necessary to add the ability to press the jump button while in mid-air. And because Sonic can't fly or glide, we added the Insta-shield," says Iizuka. This move allowed Sonic to briefly gain invincibility and an increased attacking range, which is great for taking out spiked enemies.

While every character gained elemental protection and other benefits from the new Flame, Water and Lightning Shields, Sonic gained brand-new moves – a mid-air dash, a bounce attack and a double jump respectively. "Coming up with new ideas and gameplay mechanics for how these Shields could protect the player or interact with objects in the world, like you say, the Magnetic Rings, was a lot of fun," says Iizuka. "We really looked at how the different elements would work together – for example, the Flame Shield could provide a quick burst of speed, but you'd have to be careful not to fall into water if you didn't want to lose it. I felt that it all contributed to a more engaging experience."

Everything about *Sonic 3* was shaping up to be bigger and better than ever. A brand-new special stage and three bonus stages were in the works, and instead of taking place on a selection of standard stages, the new Competition Mode had brand-new bespoke

SCENES UNSEEN

WHAT SECRETS LURK IN THE SONIC 3 PROTOTYPE?

■ The title screen is an obvious placeholder – the 3D render of Sonic is a little different from the one used in the final game, and its colours have been crudely converted for use on the Mega Drive.

■ Plans originally called for Sonic to arrive on Angel Island by surfboard, before the intro sequence was reworked to incorporate Tails and a Super Sonic transformation.

■ Early Knuckles sprites looked rather different to those used in the finished game. We think he looks a bit meaner than he does in his final incarnation – what do you think?

designs tailor-made for racing. Boss battles required more strategy, including some encounters in which the enemies needed to be tricked into hurting themselves. Sonic and Tails had redesigned sprites to go with a refreshed graphical direction, and the game was even set to feature music from Michael Jackson as well as Sega's highly capable composers – read more about that in The Jackson Factor. Best of all, Sega had managed to keep everything highly secret in a way that it hadn't for *Sonic 2*.

But as the autumn of 1993 wore on, it became clear that it simply wasn't going to be possible to finish the game as planned while meeting that all-important February release date. In the *Sega Magazine* interview, Naka stated that conversations about splitting *Sonic 3* across two cartridges came "at the very end of development" and that the method to combine cartridges was figured out "at the very, very last minute", with the game's programming revised to take the Lock-On cartridge into account. "It was a very difficult decision to split the game into two cartridges. One major issue was how to make a cohesive product when it came to the second half of the game," says Iizuka. "Data couldn't be carried over if we used two separate cartridges, making the Knuckles routes we had built into the *Sonic 3* stages unplayable. That's where the idea came for the Lock-On cartridge, allowing the two cartridges to work together. I remember thinking it was an insane idea! I was very impressed with Sega being able to make it a reality." The *Sonic 3* prototype found in 2019 suggests that the process of splitting the games started about a month before the final build. ▶

LOCKED AND LOADED

JUST HOW DID SEGA WORK KNUCKLES INTO SONIC 2?

■ "Even I was surprised by the idea to use Lock-On cartridges to make Knuckles appear in *Sonic 2*," says Takashi Iizuka. "Nowadays it's easy to update older games with a patch, but you obviously can't change the code on a game contained in a ROM cartridge. The programmers who made it happen were just amazing." Indeed, the inclusion of Knuckles in *Sonic 2* seems technologically miraculous – *Sonic 3* had been created with the Lock-On cartridge in mind, but *Sonic 2* was completed well before it was conceived.

The truth is that the game was essentially rewritten to take Knuckles into account. When *Sonic & Knuckles* boots up, the first thing it does is to check the header data of the locked-on cartridge. If *Sonic 2* is detected, control is passed to a secondary 256KB chip in the *Sonic & Knuckles* cartridge, which contains the vast majority of program data required for Knuckles in *Sonic The Hedgehog 2* – level layouts, programming for Knuckles' moves and more. The *Sonic 2* cartridge mostly provides art assets, although the sound driver is run directly from the *Sonic 2* cartridge as well.

So if that was possible for *Sonic 2*, what about the original game? "I'm not a programmer so I don't know the details, but I heard that it wasn't possible because the data was structured differently in *Sonic 1*. That's why the new concept for Blue Sphere was created," replies Iizuka. When *Sonic 1* is detected, a special mode is activated with thousands of bonus stages to try. Any Mega Drive game under 16 Mbit will also trigger a limited version of this, generating a stage based on the ROM header data, but those over 16 Mbit won't because the *Sonic & Knuckles* cartridge doesn't map the area of data including the header.

» [Mega Drive] New power-ups rewarded players for using Knuckles to explore previously inaccessible areas.

» [Mega Drive] Knuckles replaces Sonic on the Casino Night Zone reels in a neat little touch.

■ Here's that "helper mechanic" in action – Tails is scripted to fly down early in the stage, giving Sonic the opportunity to catch a lift to higher ground. It's a little clunky in action.

■ The background for Hydrocity Zone Act 1 was initially green and grey with plenty of plant life, but it was completely redrawn for the final game.

THE JACKSON FACTOR

IS THE KING OF POP'S MUSIC REALLY IN SONIC 3?

» The 2020 vinyl pressing of The Jetzons' *Hard Times* used Ice Cap Zone artwork on the sleeve.

Michael Jackson had a long-standing association with Sega during his life, from the *Moonwalker* games to *Michael Jackson In Scramble Training* and Space *Channel 5*. It is also pretty well established that for some time, the pop icon was involved in creating music for *Sonic 3* – Sega figures including Yuji Naka, Naoto Ohshima and Roger Hector have all confirmed that he was linked with the project, as have Brad Buxer, Doug Grigsby III and Cirocco Jones, songwriters credited on both *Sonic 3* and Michael Jackson's music.

What remains contentious is whether or not any of Jackson's music actually made it to the finished product. Michael Jackson's name does not appear in the game's credits list, though this is no surprise – Sega would have wanted to distance itself from him due to allegations of child sexual abuse that arose during the game's development, which were only settled days before release. Roger Hector stated in issue 244 of **Retro Gamer** that it was hastily removed at the request of Sega's Japanese headquarters, with Howard Drossin replacing "basically 16 weeks' worth of work, in a week and a half". In a 2016 interview with the Huffington Post, Brad Buxer offered an alternative explanation, claiming that Jackson "wanted his name taken off the credits if they couldn't get it to sound better".

However, in a 2022 interview with the Abbey Road Institute Paris, Buxer stated, "I'd been doing all the Sega *Sonic The Hedgehog* cues because the way Michael works is, he'll tell Sega he'll do it and then he says, 'Brad, you do it.' Right? So I think we did one cue together with Michael. One. And the rest, I had to do it myself." Buxer goes on to say that 41 musical cues had been created. He also says that for *Stranger In Moscow*, the song closely linked to *Sonic 3*'s credits tune, he had played the verse and subsequently written the chorus in half an hour during a phone call with Jackson, who had "nothing in mind for that, nothing". One tune that Jackson definitely had no involvement in was Ice Cap Zone's theme, which was based on the song *Hard Times* by Brad Buxer's old band The Jetzons.

So is Michael Jackson's music really in *Sonic 3*? If you think of Michael Jackson as a collective creative enterprise which covers the songwriters, session musicians and others that he worked with, then it's hard to deny that claim. But as for the man himself, the chances seem slim. We know that only a relatively small number of *Sonic 3*'s tracks were replaced in the Jackson-less versions of the game, so if he really did contribute to just one of 41 tunes, there's every chance it was never used to begin with.

» [Mega Drive] Carnival Night Zone is one of the three zones that had its music replaced in *Sonic Origins*.

» [Mega Drive] You can lead this buffoonish rock monster into defeating itself, if you like.

The decision to split the game had some knock-on effects in the game design. Flying Battery Zone was originally positioned between Carnival Night Zone and Ice Cap Zone, but was moved to become the second stage of *Sonic & Knuckles* instead. "I don't think there were any other stages that were added or moved, but we did make some spec changes," says Iizuka. "The Launch Base boss was an Eggman boss as usual, but splitting the game made it the last stage of *Sonic 3*, so we added Big Arms. Mushroom Hill became the first stage of *Sonic & Knuckles*, so we readjusted the difficulty to make it easier than originally planned." Two bonus stages were left unused to be finished later on, and most significantly Knuckles was held back as a playable character and appeared solely as an antagonist outside of Competition Mode.

***Sonic 3* released on 2 February 1994 in North America, and followed to the UK on 24 February, with some European countries and Australia following in March.** In Japan, where the Mega Drive was less popular, the game finally released on 27 May. Despite its truncated nature, the game was very well-received by the majority of gaming magazines. *Mean Machines Sega* gave it 94%, with Radion Automatic saying, "The whole game is packed with new ideas and the levels, whilst few in number, are absolutely huge." *Mega* also noted the size of the levels and praised the "new and bizarre power-ups" and concluded by saying that "this is probably about as good as *Sonic* can possibly get".

By this point, critics had developed a fatigue for platform games in general and *Sonic* in specific, but *Sonic 3* proved good enough to overcome it. *Computer & Video Games* awarded the game 94%, with reviewer Deniz Ahmet admitting that he was "all set to be highly critical of *Sonic 3* after hearing that it was more of the same", but found "there are so many new and imaginative ideas that I have no complaints". Likewise, *Sega Zone*'s Jonathan Nash "tried to hate it", but found that "my pre-prepared words of disapproval were forgotten" upon playing it, and gave it 93%. Where complaints arose, they were mostly

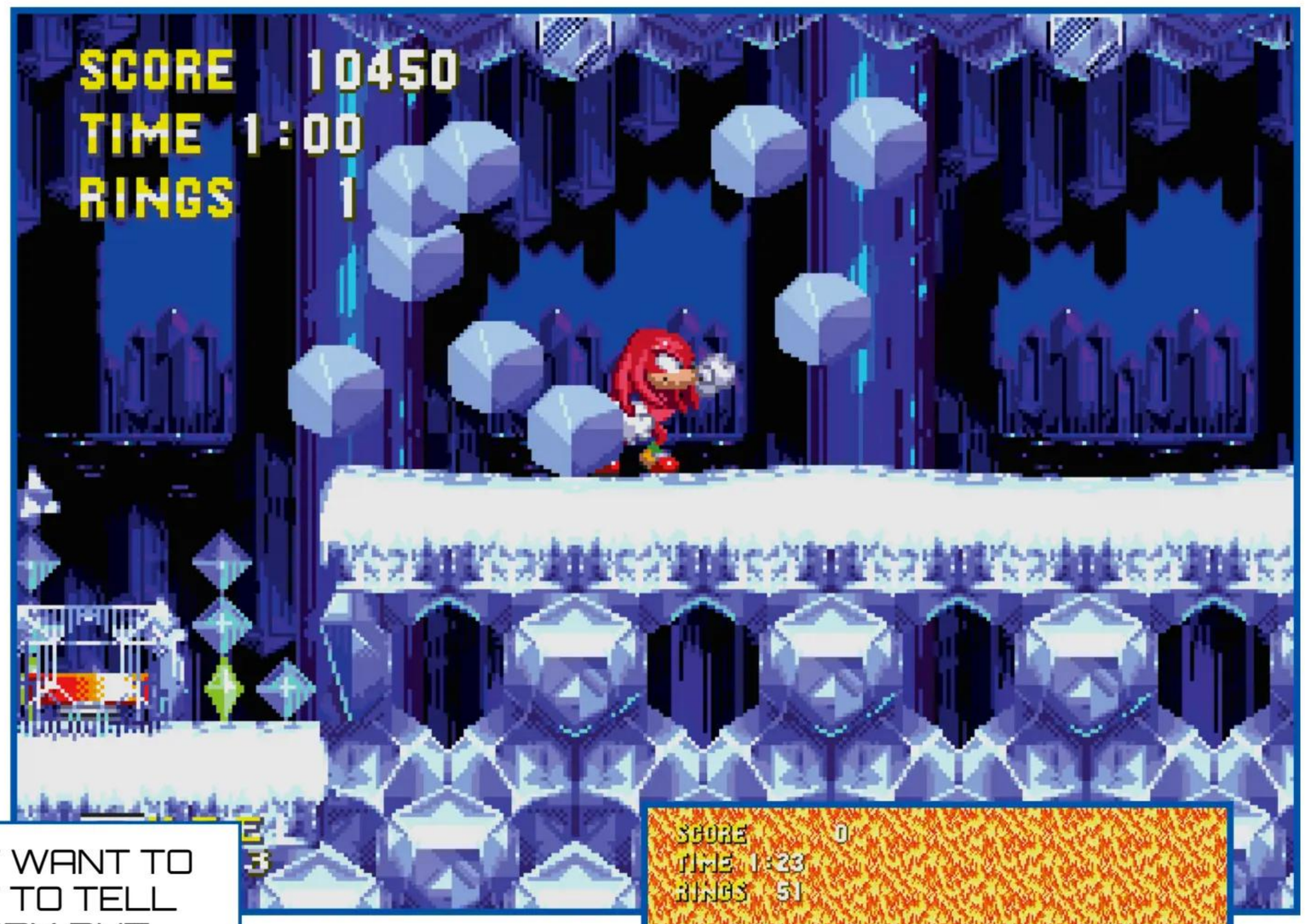
» [Mega Drive] In this cutscene, Knuckles is made aware of Robotnik's *shocking* betrayal. (Sorry.)

about the difficulty level. *Mean Machines Sega* said that "completing the game without the Emeralds is not very difficult at all", while *Sega Zone* felt that you could "quite easily storm through the game in an afternoon". *Sega Pro* gave it 87%, saying that it was a "state-of-the-art platformer" that would have scored 95% were it not for the £59.99 price tag, arguing "few games are worth that much money and when you couple this with the length of time it'll take to complete it, it's a joke". *GamesMaster* also gave the game 87%, saying that "the similarities are far more numerous than the differences" when compared to its predecessors. Digitiser made similar complaints in a review that is remembered to this day for its 72% score.

> "WE DIDN'T WANT TO USE TEXT TO TELL THE STORY, BUT THOUGHT OF WAYS TO MAKE CUTSCENES THAT COULD BE FOLLOWED VISUALLY"
> **TAKASHI IIZUKA**

Even if you weren't reading magazines, *Sonic 3*'s incomplete nature was somewhat obvious – the game's notoriously difficult-to-access level select screen listed stages that were completely inaccessible, and the sound test was filled with loads of unused music. But the fact that *Sonic 3* had been split into two parts was no secret at all, with *Mean Machines Sega*'s review of *Sonic 3* talking about future plans for "a deluxe 24-meg edition of the game, with extra levels and enhanced play", as well as "an upgrade for the 16-meg edition, a plug-through cart with two ends, which will also work with your *Sonic 1* and *2* carts to create extra levels". Development of a single-cartridge version of the complete game was underway but ultimately scrapped in favour of the plug-through cartridge that became *Sonic & Knuckles*.

For Iizuka and the rest of the team, the extra time was a major relief – though *Sonic & Knuckles* launched just eight months after *Sonic 3*, compared to over fourteen months between *Sonic 3* and *Sonic 2*, *Sonic & Knuckles* was a far more relaxed project. "The development time for *Sonic 3* was extremely tight, and there was barely time to sleep," Iizuka recalls. "But we still worked on some *Sonic & Knuckles* stages during *Sonic 3* development and *Sonic & Knuckles* development continued in the time between *Sonic 3*'s master ROM and its launch date, so launching it eight months later wasn't that tight of a schedule. That's why we had time to come up with additional specs like Lock-On cartridges and Knuckles in *Sonic 2*."



» [Mega Drive] Knuckles puts his fists to good use, smashing through an icy obstruction.

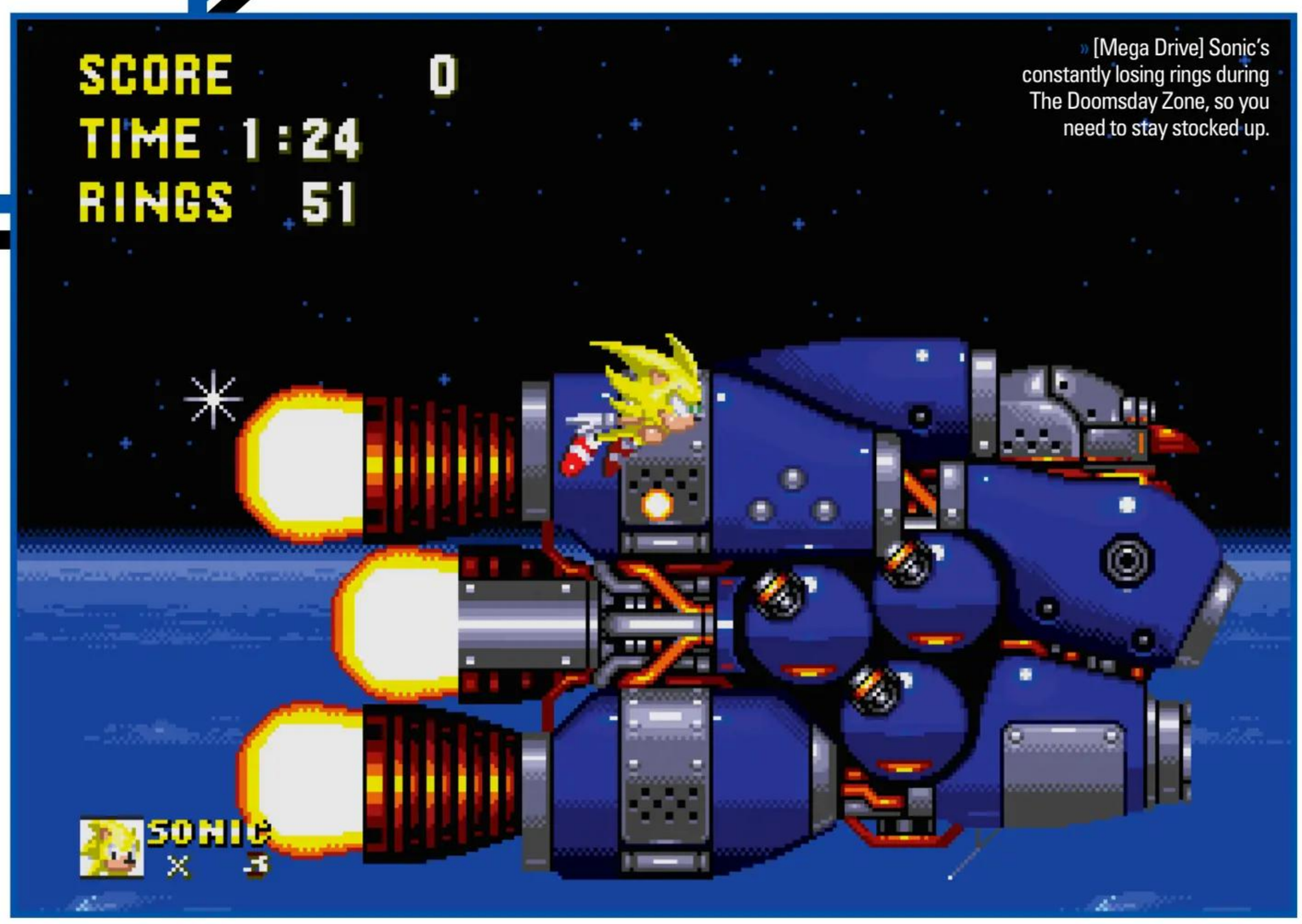
With the engine already in place, the team was free to create the remaining planned stages and implement the two additional bonus games, but for many players the opportunity to take control of Sonic's new rival was the key attraction. "As you know, in the latter half of the story Knuckles learns that he had been deceived by Eggman and joins Sonic. So the idea was to add him as a playable character after the player completed Sonic's storyline," says Iizuka, explaining how things would have worked had *Sonic 3* been released as a singular product. *Sonic & Knuckles* allows you instant access to the echidna whether combined with *Sonic 3* or not, but in spite of that change of arrangements, Knuckles' story is still influenced by the original plan. "When playing as Knuckles, Sonic has already defeated Eggman according to the storyline, so the Death Egg is gone. That's why we replaced Eggman with Egg Robo, and the last boss is Mecha Sonic rather than the Death Egg Robot," Iizuka tells us. "Instead of just adding a playable character, we wanted to tell a story that fits the character."

Sonic & Knuckles also included The Doomsday Zone – a secret final confrontation ▶

» [Mega Drive] Having the appropriate Elemental Shield can make certain sections of the game a doddle.

» [Mega Drive] Mecha Sonic powered by the Master Emerald? That doesn't seem like good news for Knuckles.

» [Mega Drive] Reversed gravity is just one of many fun features of the Death Egg Zone.



» [Mega Drive] Sonic's constantly losing rings during The Doomsday Zone, so you need to stay stocked up.

» [Mega Drive] Endless Mine has some of the finest music in a series renowned for great soundtracks.

» [Mega Drive] Blue Spheres is a popular special stage, which later returned in *Sonic Mania*.

▶ that can only be accessed as Sonic, and only if you've gained enough Chaos Emeralds to transform into Super Sonic or his upgraded Hyper Sonic form. "It was designed as an aerial battle. Sonic is able to fly when transformed, so we removed the ground completely and had him flying through space," says Iizuka. This climactic battle proved to be the origin of a tradition of the *Sonic* series, as it provided the basis for memorable boss fights in later games including showdowns against Perfect Chaos, Finalhazard and the Time Eater.

Released globally in October 1994, *Sonic & Knuckles* received another strong set of reviews. *Mega* awarded the game 92%, saying, "The main criticism about the first three games being too easy could in no way be applied to this!" *Sega Power* felt similarly and gave the game 90%, while *Sega Pro*'s 90% review highlighted the differing routes each character offered. In *CVG*'s 91% review, Rik Skews noted that he "expected *Sonic & Knuckles* to be scrappy" due to its short development time but felt that it "makes a great conclusion to the series". *GamesMaster*'s 90% review felt that the increased difficulty and backwards compatibility meant that the game was "going to last".

A lack of originality was the main cause for critical concern. Though *Sega Magazine* awarded *Sonic & Knuckles* 92% and Richard

FRESHLY SQUEEZED

WE TAKE A LOOK AT THE NEW UPGRADE TO SONIC'S LATEST COMPILATION

» [PS5] So is it now *Sonic 3 & Knuckles & Amy*? That seems a little unwieldy.

■ If you're looking to play *Sonic 3 & Knuckles* on modern consoles, the only way to do it is as part of *Sonic Origins*, which was released in 2022. The compilation also includes *Sonic 1*, *2* and *CD*, and all of them are presented in remastered form via the Retro Engine, with FMV intros, widescreen display, the ability to retry special stages and a brand-new Mission Mode. There are plenty of goodies to unlock too, including concept art, music and videos. We reviewed the compilation in issue 235 and gave it 80%, saying that while the new versions are "mostly very good" a variety of changes and minor bugs meant that "Mega Drive purists may wish to consider other options".

Sonic Origins has recently been upgraded with the *Plus Expansion Pack* DLC, for £8.99. This gives you access to Knuckles in *Sonic CD*, Amy Rose as a new playable character in all of the main games, and 12 extra games from the Game Gear – and unlike the main games, these aren't enhanced ports. They play fine, but there are some oddities with the sound emulation and none of the visual options you might hope for. Here's a look at all of the additional games.

SONIC THE HEDGEHOG

■ Sonic's 8-bit debut is like a remix of the Mega Drive game with a mixture of familiar and new stages, all with unique layouts and bosses. It doesn't have spectacular loops, but it's more challenging and has unique level designs including a vertical climb, a maze and an auto-scrolling stage.

SONIC CHAOS

■ Tails joins Sonic for this adventure, complete with his ability to fly. For the first time in the 8-bit games, Chaos Emeralds are earned in special stages rather than found in regular gameplay. This is a good starting point, as it's a relatively easy game compared to its predecessors.

SONIC THE HEDGEHOG 2

■ This is totally different to the Mega Drive's *Sonic 2*, with Tails not being a playable character. The Game Gear version is notoriously tough, with many players failing to pass the first boss. Even then, you'll need all the Chaos Emeralds to take on Robotnik in Crystal Egg Zone.

SONIC TRIPLE TROUBLE

■ New antagonists ahoy, as Sonic and Tails are pursued by Knuckles and Nack The Weasel – or Fang The Sniper in Japan, where he is a jerboa. There's some great music here and Sonic gets to go snowboarding again, and the level of challenge is on the easier side.

Leadbetter called it "the perfect buy if you already own all the other *Sonic* games", Radion Automatic recommended that those "looking for something to renew your faith in the genre" try *Dynamite Headdy* instead. In *Mean Machines Sega*, Steve Merrett felt it was "just more of the same and, consequently, is likely to be usurped by Sega's new hero, *Dynamite Headdy*", and offered a review score of 85%. Likewise, in *Games World*'s 83% review, Dave Perry felt that "our once plucky blue hero is starting to look tired".

The brilliance of *Sonic & Knuckles* was that while it was substantial enough to work as a stand-alone game, the Lock-On cartridge made it a unique offering at a time when expansion packs were typically a technical impossibility in the console market. What had started off as a problem ended up being a creative and commercial triumph. Both halves of the project were fine games taken alone, but elevated when joined together – *Sonic 3* owners got a great reason to revisit the game, and got benefits like Tails and the save game feature that didn't exist in *Sonic & Knuckles* alone. Add the other benefits of the Lock-On cartridge – see Locked And Loaded for those – and *Sonic & Knuckles* was the perfect addition to a *Sonic* collection. For Sega, it provided not only a key game for the holiday season of 1994, but a way of shifting more copies of back-catalogue games. Overall, *Sonic 3* and *Sonic & Knuckles* combined sold four million copies.

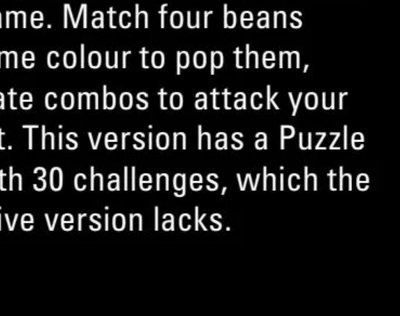
> "THE IDEA WAS TO ADD KNUCKLES AS A PLAYABLE CHARACTER AFTER THE PLAYER COMPLETED SONIC'S STORYLINE"
> **TAKASHI IIZUKA**

***Sonic 3* and *Sonic & Knuckles* later made their way to PC in 1997 as part of *Sonic & Knuckles Collection*, which offers the ability to play either game individually or both together.** This version features MIDI music and replaces some of the tracks attributed to Michael Jackson's team with tunes that were present in a prototype build of the Mega Drive game. The games arrived on the Saturn as part of *Sonic Jam* the same year with no substantial changes, and emulated Mega Drive versions were a staple of Sega's compilations until 2010, when re-releases dried up. *Sonic 3 & Knuckles* finally returned in combined and remastered form as part of the *Sonic Origins* compilation in 2022. This version featured new arrangements of the music found in the *Sonic 3* prototype and *Sonic & Knuckles Collection*, suggesting that while no legal action has ever been made public, music rights were at the heart of that lengthy absence.

Looking back at *Sonic 3* and *Sonic & Knuckles*, Iizuka's only quibble with the end product has been resolved. "I do wish we had been able to sell *Sonic 3* and ***Sonic & Knuckles*** as one complete game. So I was happy that we were able to accomplish that with *Sonic Origins* last year," he tells us. But the split release has done nothing to damage the standing of the game among fans – while *Sonic 2* is arguably the classic *Sonic* game that has the most appeal among the general gaming population, Sonic fans tend to hold *Sonic 3 & Knuckles* as the best of the classics. "It makes me truly happy to hear that," Iizuka says. "Many of the people on the development team were veterans who had worked on *Sonic 1* and *Sonic 2*, and I think it's the result of everyone's determination to make a game that outshines the previous two. I'm proud that I was able to be a part of *Sonic 3*'s development." *

» [Mega Drive] Here's a game with gacha mechanics that we're actually happy to play.

ORIGINS



SONIC BLAST

■ Sonic and Knuckles star in this platformer, one of the very last Game Gear games to be released. The choice to use pre-rendered 3D sprites for this was a bold one, and realistically probably not the wisest one. The gameplay also fails to live up to the standards set by its 8-bit predecessors.

SONIC SPINBALL

■ This handheld version of Sonic's pinball spin-off uses the same game structure and level themes as the Mega Drive game, but with new stage layouts and completely different bonus stages. It's a surprisingly good rendition of the game and adds welcome variety to the compilation.

SONIC DRIFT 2

■ The second attempt at doing a *Sonic* racing game on the Game Gear turned out considerably better than the first, thanks to more tracks, more racers and a better handling model. Banked corners, tunnels and point-to-point races help to set it apart from other 8-bit racing games.

TAILS' SKY PATROL

■ Originally released in Japan only, this game has you flying Tails around obstacle courses pursuing the evil Witchcart, using a ring to destroy enemies and use items. There aren't many levels to beat but you'll struggle to see them all due to the game's unexpectedly brutal difficulty level.

SONIC LABYRINTH

■ This isometric action game has Sonic hunting for keys against the clock, in order to escape to the next stage. Many fans dislike it for its slow pace, but it's not too bad – the only major issue being the utterly obtuse method of obtaining the final Chaos Emerald required for the good ending.

SONIC DRIFT

■ Sonic's racing debut takes the zones from the original game and repurposes them as racing circuits. If you're familiar with the Game Gear's take on *Super Monaco GP* you'll feel at home here, but this one wasn't particularly brilliant, and the original Game Gear release never left Japan.

TAILS ADVENTURES

■ Don't write off Tails' star turn for its slow pace, as it's a rather absorbing puzzle platformer and something of a forgotten gem. Tails can pick up various items as he explores the world, allowing him to open new paths ahead and in previously completed stages that he revisits.

DR ROBOTNIK'S MEAN BEAN MACHINE

■ Here's the *Sonic*-flavoured version of *Puyo Puyo*, and it's a mighty fine puzzle game. Match four beans of the same colour to pop them, then create combos to attack your opponent. This version has a Puzzle Mode with 30 challenges, which the Mega Drive version lacks.

THE MAGIC OF MARIO

FROM HIS INTRODUCTION AS JUMPMAN IN DONKEY KONG TO THE RECENTLY RELEASED SUPER MARIO WONDER, NINTENDO'S ICONIC SUPERSTAR HAS BEEN DELIGHTING GAMERS FOR GENERATIONS. VETERANS FROM ACROSS THE INDUSTRY REVEAL WHY MARIO HAS LOST NONE OF HIS APPEAL

WORDS BY NICK THORPE, RORY MILNE AND DARRAN JONES

There's a reason why Mario has graced the cover of Retro Gamer multiple times. He's become one of gaming's cornerstones, a character that's every bit as synonymous with videogames as Pac-Man, Lara Croft or those pesky little aliens from *Space Invaders*. There's a good chance that even your dear old nan will recognise Mario – that's how much of an important cultural icon he's become.

Originally making his debut in single-screen platformers like *Donkey Kong* and *Mario Bros*, in 1985 he starred in his first side-scrolling adventure, *Super Mario Bros*, and the moustachioed hero hasn't looked back since. For many gamers and developers, the *Super Mario Bros* series is considered a template for how to create the perfect platformer. Many have attempted to emulate Mario's success over the years and very few have succeeded – fewer still have actually bested him. Aside from the recent success of Crash Bandicoot and Spyro, only Sonic could be considered as Mario's biggest competitor today and even with all his popularity, he's rarely had the critical acclaim in his 3D adventures like Mario has had. Even an average *Mario* game can feel special when placed against the competition, and it's telling that of all the platform heroes of the Eighties and Nineties, only Sonic has endured for as long as Nintendo's lovable plumber.

From his 2D adventures of the mid-Eighties and early Nineties, to his innovative modern 3D outings of today – Mario's games have always managed to impress and it's a rare *Mario* adventure that isn't critically acclaimed by reviewers. *Super Mario 64* for example, not only redefined platforming in a 3D space, but also set new standards for 3D games in general – particularly when it came to how characters should control in this exciting new environment.

In more recent years the adventures of Nintendo's evergreen star have veered off in two distinct directions: the *New Super Mario Bros* series, which debuted on the DS in 2006, is where you'll find his side-on escapades, while his 3D adventures are largely where all the series' new innovations can be found.

But what makes Mario's games so special and why have they constantly been considered the pinnacle of their genre for so many years now? We'll be answering those questions over the following ten pages by breaking down the many core aspects of Mario, from how his games control, to how they're designed, with input from a variety of industry veterans. We'll also be highlighting the sheer versatility of Mario and examining some of the many spin-offs he's appeared in, from the *Super Mario Kart* franchise, to RPG offerings like the *Paper Mario* series. Even if you're not the biggest fan of Mario, it's hard to deny the colossal impact he's had on videogame culture and the platforming genre and his recent billion dollar success at the box office would suggest that he's more popular than ever. So let's hear it for Mario, a true gaming superstar whose success has come along in leaps and bounds.

THE INTERVIEWEES

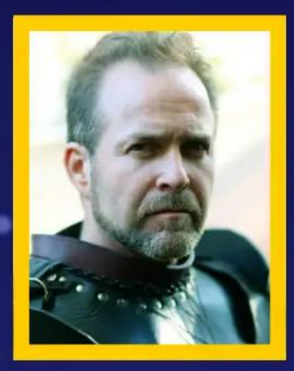
MATTHEW CASTLE
■ Former editor, *Official Nintendo Magazine*

DALEY JOHNSON
■ Game designer, Playtonic Games

SMOOTH MCGROOVE
■ YouTube creator, vocalist

PAUL MURPHY
■ Author, *Gamebook: The Unofficial DMG Companion*

PHILIP OLIVER
■ Game designer, cofounder of Blitz Games



CRAIG STITT
■ Artist, creator of *Spyro The Dragon*

CHRIS SUTHERLAND
■ Programmer, Playtonic Games, ex-Rare

CAPTIVATING CHARACTER

IF YOU'RE GOING TO CHOOSE A CHARACTER AS THE FACE OF YOUR COMPANY, YOU'D BETTER MAKE SURE HE IS APPEALING AS POSSIBLE. SHIGERU MIYAMOTO'S DESIGN HAS PROVEN TIMELESS, PROVIDING NINTENDO WITH A FACE THAT HAS SURVIVED DECADES IN THE PUBLIC CONSCIOUSNESS

Ask someone who Mario is, and there's a good chance they'll be able to tell you at least a little something about him. When the 35th anniversary of *Super Mario Bros* rolled around in 2020, the Q Scores Company noted that 72% of Americans over the age of six were familiar with Mario, and that he was the most popular videogame character. It's likely that this figure has only grown since then – after all, his 2023 movie grossed over $1.3 billion.

But Mario hasn't always been the star that he is today. Indeed, Mario's name didn't even appear in the title of his debut outing, though his name wasn't exactly a fixed matter when *Donkey Kong* arrived in arcades – the American operating manual for the game referred to him as Jumpman. In an Iwata Asks interview on *New Super Mario Bros*, Shigeru Miyamoto noted that he referred to Mario as "Mr Video," a character intended for use across a variety of games. "Someone at Nintendo Of America actually came up with the name Mario," he noted, and a promotional flyer does indeed call him Mario.

Speaking of *Donkey Kong*, Mario wasn't even a plumber to begin with – he was a carpenter in that game. In a 2012 interview, Shigeru Miyamoto told *Game Informer* that, "There's really only one rule in terms of the things that Mario does. Generally, it's that he's more on the blue-collar side." You can see that in his early roles, as he worked in factories in his Game & Watch years and did demolition work in *Wrecking Crew*, reflecting Miyamoto's desire to use him in a variety of settings. In fact, the only major exception to that blue-collar preference is *Dr Mario*. The 1983 arcade game *Mario Bros* established Mario and his brother Luigi as plumbers, and that was the characterisation that ultimately stuck.

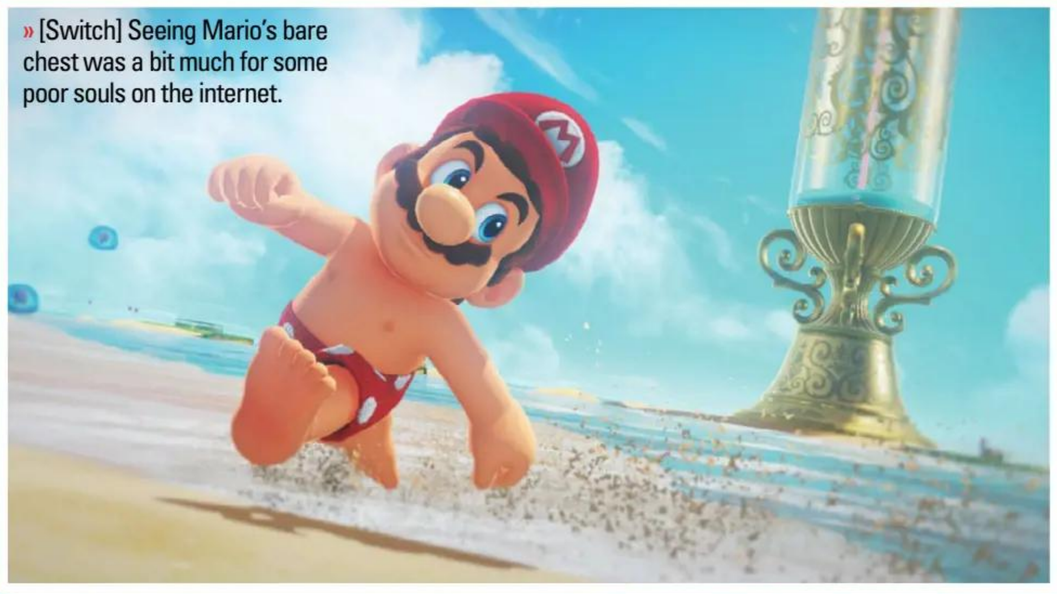
Though Mario's name and occupation weren't nailed down from the start, his look was almost complete from the very beginning. Take a peek at the cabinet artwork for *Donkey Kong* and though Mario's eyes were smaller and he looked a bit more riled up than he usually gets, he's in his iconic red hat and has a prominent moustache. He's wearing red dungarees and a blue shirt, and though the original *Mario Bros* artwork gives him a blue hat, blue dungarees and a red shirt, he swapped back to the *Donkey Kong* colour scheme for the first two *Super Mario Bros* games – it was *Super Mario Bros 3* that introduced the colour scheme he wears today.

It might seem crazy that the process of solidifying Mario's character and appearance took over five years to achieve, but the result is a design that has stood up to decades of scrutiny and the introduction of 3D artwork. The effort was more than worthwhile. "I think a big part of Mario's appeal is what he represents – the heart of Nintendo! When you see Mario, your brain goes 'fun!'" says Daley Johnson, a game designer at Playtonic and platform game enthusiast. "He's got that Mickey Mouse effect. That, 'Oh I know what to expect.' Mario guarantees a quality stamp because he's an icon." He's a constant – a character that never needs to reinvent himself, because he's timeless.

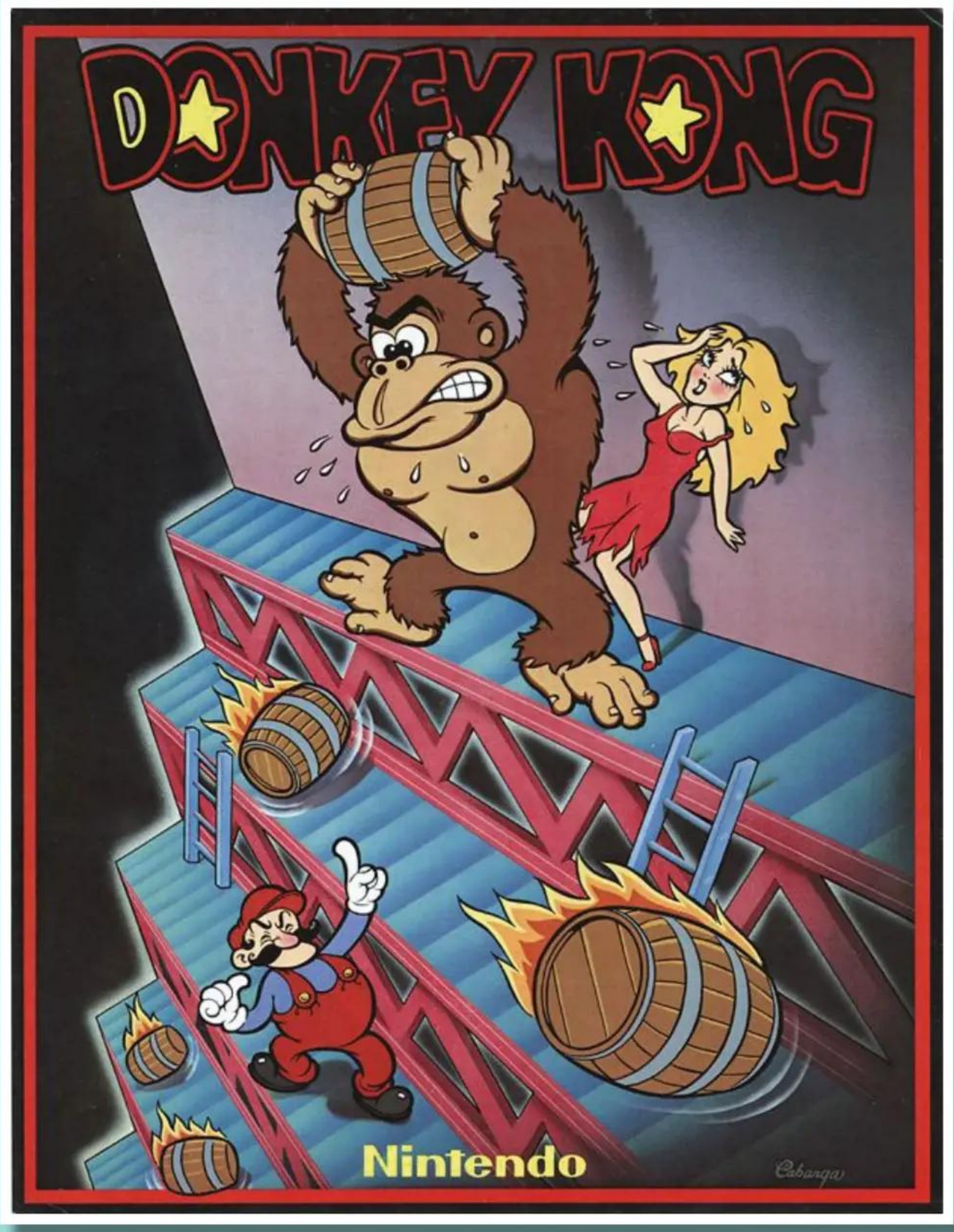
Playing with Mario's appearance can even pay dividends in gameplay terms – the first time Mario had his hat stolen in *Super Mario 64* was certainly memorable, as the sight of his hair was both unexpected and somewhat unsettling. *Super Mario Sunshine* allowed him to don some summer clothes if you were good enough to earn them, and *Super Mario Odyssey* even gave him beachwear to some level of online consternation. What were people expecting from a game that allowed Mario to take the form of everything from dinosaurs to Goombas, though? Indeed, it's the hat and moustache that keep him recognisable in those alternative forms that he adopts.

While it's not something that should be done too often, it's worth comparing Mario to Sonic here. Sonic's design has changed enough over the years that Sega went so far as to acknowledge the differences in *Sonic Generations*, with the shorter, mute version of the past meeting the streamlined version of the present. Nintendo has never felt the need to perform such a stunt – indeed, the furthest it has gone is updating Mario's colour scheme in older sprites in the *Super Mario Maker* games, in order to match his current appearance. Those games present the various looks of Mario not as a contrast to one another, but as part of one consistent identity that has persisted for decades. Given the strength of Mario's character design, we're sure it will last for decades to come too.

» Here's the man as he looks today – not much has changed in over 30 years.



» [Switch] Seeing Mario's bare chest was a bit much for some poor souls on the internet.

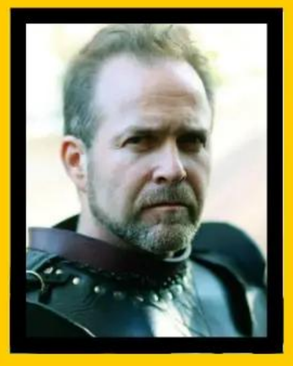


» Mario's earliest appearance in *Donkey Kong* is recognisably him, albeit with some unusual aspects.

» Mario's look was pretty firmly established by the time *Super Mario Bros 3* arrived in the late-Eighties.

Q&A CRAIG STITT

THIS ARTIST KNOWS ABOUT RUNNING UP AGAINST MARIO, HAVING WORKED ON SONIC 2 AND CREATED SPYRO



As an artist, what do you think gamers find appealing about Mario as a character?

I think for Mario it was the whole package. The simple, yet memorable worlds, the *great* music, and as the game progressed, Mario's voice and personality really came out.

I believe it's also that the game is, on one hand, very simple to play, but on the other hand, very difficult to master. This lets new and young players have fun, and keeps the dedicated players coming back.

Do you think his everyman persona has become an important part of his appeal over the years?

I would have to agree that his everyman persona is an important part of his longevity and popularity. You look back at games like *Earthworm Jim*, or *ToeJam & Earl*, and so many other awesome games, that all had great characters and great/innovative gameplay, but you couldn't really identify with the characters. I also think there is also a certain amount of 'genius dumb luck' that comes into play as to why some characters take off and others fall away.

You've worked on both 2D and 3D platformers. Did Mario's games or Mario as a character have any influence on games you were making like *Sonic The Hedgehog 2* and *Spyro The Dragon*?

It would be hard to make a game and not have Mario have an influence on that game, be it 2D or 3D or VR. Mario is now cemented in our subconscious and is a part of that aspect of our brain that says, "This is fun, or this is not fun." Along with Mario, I also think Sonic and Spyro are part of that 'subconscious designer' in our heads.

Why do you think that characters like Mario and Spyro were able to flourish in 3D worlds, while popular 2D platform mascots like Earthworm Jim and Bubsy floundered?

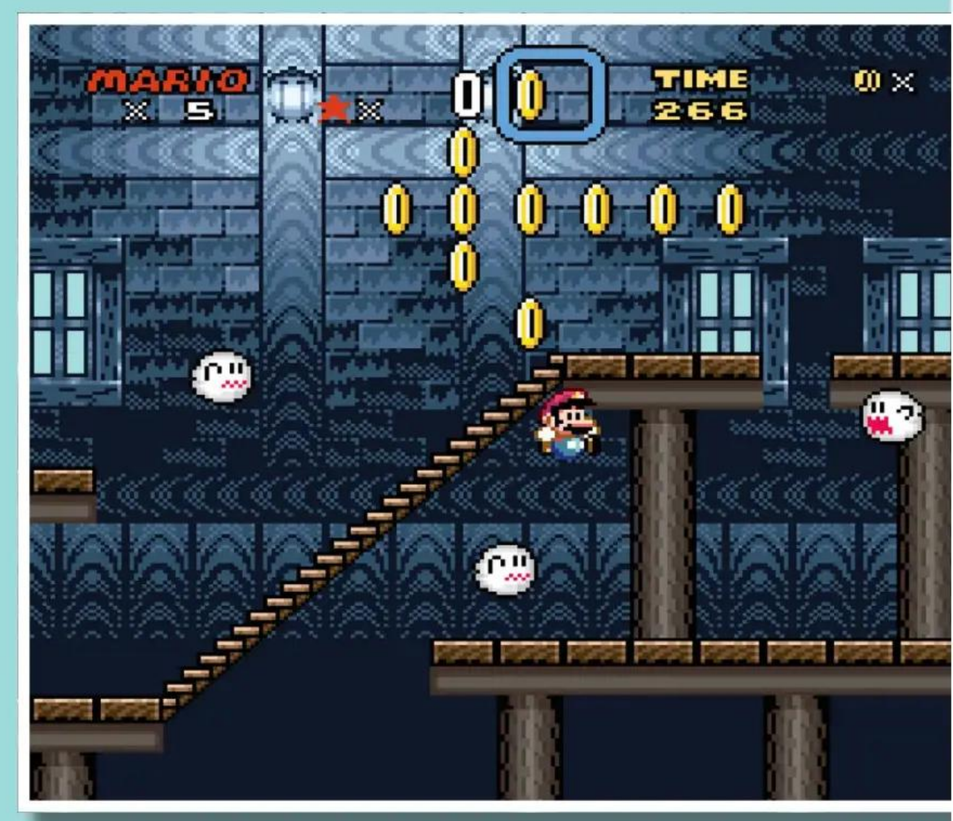
I think one of the main reasons is that the gameplay and controls were very simple in those games. Little kids could play, as well as mums and dads. Yet the gameplay was also complex and hard enough to keep serious gamers engaged.

I used to answer the fan mail for Spyro and I got a *lot* of letters from parents saying how much their entire family enjoyed the game. They would then say that their son or daughter was stuck at a certain point and ask for hints. Then, many times, the parent would go on to say that *they* were stuck at a different spot and asked for help!

Sadly there are a lot of great games that didn't go as far as they could have, or should have, because the publisher messed up the marketing or simply didn't have any marketing.

DIVINE DESIGN

MARIO COULD HAVE ALL THE APPEAL AS A CHARACTER, BUT WITHOUT ENGAGING WORLDS TO EXPLORE HE WOULDN'T BE MUCH OF A VIDEOGAME STAR. THANKFULLY, NINTENDO HAS ENSURED THAT IMAGINATIVE LEVEL DESIGN IS SOMETHING THAT THE PLUMBER HAS NEVER HAD TO DO WITHOUT



» [SNES] Ghost Houses in *Super Mario World* emphasise thinking over straightforward platforming action.

Above all else, the driving force behind Mario's success is exquisite game design – something that is acknowledged by players and game designers alike. "*Mario* games have a timeless charm and wide appeal whether it's 2D or 3D," says Philip Oliver, who along with his twin brother Andrew is a veteran developer with over 40 years in the business. "Objectives are obvious, rewarded en route and praised when completed. Enemies are interesting, individually not too tough, but get progressively more challenging based on abundance and locations. Even when you 'die', it feels fair. Not something that can be said of all games, especially back then!

"I first saw *Super Mario Bros* on the NES at CES Jan 1990 in Las Vegas, by which time it was already a monster hit," Philip remembers. "It was such a beautifully elegant design. The objective was clear: get to the end on the right, but enemies and obstacles, of increasing difficulty, will make that a challenge! With a simple console control pad and its limited buttons, there was no learning time involved and there was nothing intimidating about it at all." Inspired by this, Philip and Andrew began to write NES games, citing *Dreamworld Pogie* as one that is a particular homage to *Super Mario Bros*. The lack of learning time Philip mentioned is one of the most famous aspects of *Super Mario Bros*, in fact. On the very first screen, the game introduces you to all of the fundamentals – enemies, regular blocks, Question Blocks and mushrooms.

> **"KEEP THE CONTROLS SIMPLE AND THE OBJECTIVES OBVIOUS, WHILST NOT APPEARING TO BE TOO SIMPLE OR CONDESCENDING"**
> **PHILIP OLIVER**

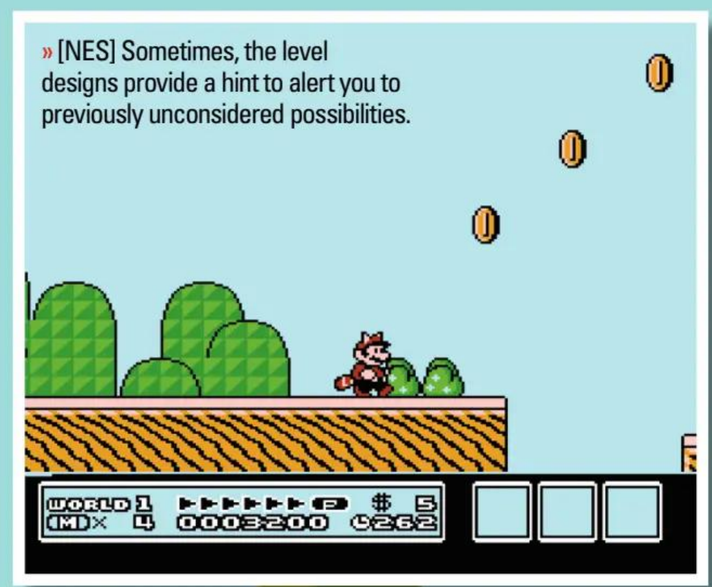
Even in the original *Super Mario Bros*, that left plenty to discover. There are varied environments with their own unique challenges, confrontations with Bowser and so many secrets to find – underground areas in pipes, beanstalks leading to the sky, Warp Zones beyond the usual end of the stage and more. Ingenious little touches like platforms connected by pulleys were the start of fantastic gimmicks employed by later games, including floating rafts and platforms that moved along rails. Likewise, enemy behaviours became more interesting, most notably with the Boos which wouldn't move if Mario looked at them.

Moving to 3D posed twin challenges for platform game designers. "Keep the controls simple and the objectives obvious, whilst not appearing to be too simple or condescending," says Philip. "In the early Nineties, game designers, particularly Andrew and I, debated how character platform games, our speciality, could achieve both these when translated into 3D," he recalls. *Super Mario 64* was a "watershed moment" according to Philip, who feels that 3D *Mario* games avoided unnecessary complexity and "only take the advantages of that third dimension and the gameplay and visual opportunities it presents".

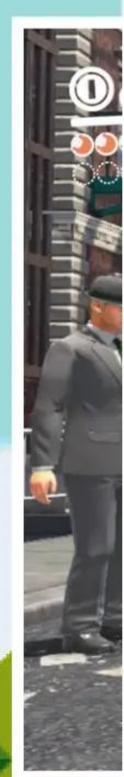
In shifting to 3D, Nintendo could have chosen to retain the linear obstacle courses of the 2D games – indeed, games like *Crash Bandicoot* had plenty of success doing just that. However, Nintendo reimagined the *Mario* formula and introduced open 3D spaces with a variety of routes and goals. "One of the breakthroughs they made was the way they handled the viewpoint camera in the 3D space," Philip explains. "It had its own logic to ensure the player got a great view of both Mario and the challenges ahead, but not simply by being locked behind him at a set distance and angle. This made it visually so much more attractive and easier to play."

One particularly strong aspect of the *Mario* games is that you never need to do absolutely everything, which serves a dual purpose. It serves as a way of circumventing frustration, by allowing players to simply avoid challenges

» [NES] Most Mario platformers are quick to reward a player's natural curiosity.



» [NES] Sometimes, the level designs provide a hint to alert you to previously unconsidered possibilities.



» [Nintendo 64] In 3D, Mario can just run around enemies, causing Nintendo to reconsider its stage designs.

» [Wii] Some innovations in 3D *Mario* games have come from unusual environments, as in the *Galaxy* games.

» [3DS] Careful stage design was required to translate the 2D obstacle course philosophy to 3D spaces.

» [Switch] Giving regular players design tools in *Super Mario Maker* does much to prove Nintendo's expertise.

that they struggle with, and it ensures that there's usually plenty of life left in the game after Bowser is finally toppled – completists will rejoice in finding all the exits in *Super Mario World*, or as many as 50 additional stars in *Super Mario 64*. In a series that appeals to such a broad range of players, that level of optional depth is essential.

Of course, Nintendo did eventually try more traditional obstacle course designs in *Super Mario 3D Land* and *Super Mario 3D World*. But no matter whether designing in 2D or 3D, Philip feels that the principles that underpin a good *Mario* level are universal. The first is to feature "[an] obvious objective, obvious route, obvious enemies and obstacles". The second is to ensure that "difficulty and duration of the level are directly proportional to how far you are into the game". The third is to engage the player with "micro rewards often (coins), occasional mini rewards for completing a section, and finish with a grand finale and big reward". Just imagine sliding down that flagpole and fireworks erupting before you turn the page, and you'll see exactly what he means.

» [Switch] Though many *Mario* stages are fairly abstract, New Donk City puts him in an urban setting.

Q&A MATTHEW CASTLE

THE FORMER OFFICIAL NINTENDO MAGAZINE WRITER EXPLAINS WHAT MAKES MARIO'S STAGES SO ENGAGING

What makes the level design in *Mario* games so strong?

It helps that they're built with the best building blocks around. Not just Mario himself, always a joy to control, but the enemies, toys and gimmicks that pepper levels from *Super Mario Bros* onwards. Crucially, the designers understand the importance of a hook – giving every stage a unique challenge, a new enemy type, a visual surprise or a setpiece that combines all of the above.

And then sprinkled over the top you have the meta strangeness – the secrets aimed at the fans who really drill into these things. That Nintendo were already doing this in *Super Mario Bros* seems so wild to me – the idea of leaping out of the level to run along the top, and to be rewarded for it, is such an out there idea. But here it is, smashing apart conventions that the game had only just introduced.

Where games like *Crash Bandicoot* tried to adapt the linear assault courses of 2D games into 3D, *Super Mario 64* adopted levels with multiple goals and fewer set routes. How important do you think that change was?

It seems inevitable to me that giving Mario 3D movement would require levels that pull him in every direction – you'd be squandering that technological evolution otherwise. Weirdly though, it does seem to trigger a tug-of-war between more traditional linear platforming and explorable land masses – one that's ongoing to this day. Even within *Mario 64* you start with the wide-open plains of Bob-omb Battlefield and slowly work your way towards more abstract spaces like Rainbow Ride.

As much as *64*'s worlds wowed me originally, I think Nintendo did something more interesting with 3D Mario when they started to prune back levels and focus on the moment-to-moment leaps and bounds. I don't want to reduce it to a crude 'jumps per minute' count, but *Galaxy* and *3D Land/World* feel more like platformers from the amount of time you spend worrying about what's under your feet at any given moment.

Where *Sunshine* and *Odyssey* changed Mario's 3D platforming tools, the *Galaxy* games focussed more on a different kind of environment. How do you think these approaches compare?

There was a time I would have said 'keep Mario pure' – transformations are one thing, but permanently altering his moves with a jetpack dependency felt like it was undermining one of the most purely enjoyable movesets in the platforming biz. *Galaxy*, which only really adds a spin jump to his repertoire, felt like a beautiful advert for what 3D *Mario* should be. The levels actively made Mario's moves more interesting which is a distinctly Nintendo bit of wizardry.

But again, *Odyssey* showed us a third way. The problem with *Sunshine* isn't the concept of a platforming tool, but the specific vagueness of FLUDD – Cappy feels more reliable and lets you do some unbelievable things as a result. The genius bit of *Odyssey* (or one of many) was including the Time Trial Ghosts so you could see what faster players were doing with that magic hat to chuck Mario round those levels at speed.

MARVELLOUS MECHANICS

FROM HIS DONKEY KONG COIN-OP DEBUT TO THE LONG-RUNNING SUPER MARIO SERIES, MARIO HAS BEEN DEFINED BY HIS RESPONSIVE CONTROLS AND ECLECTIC ABILITIES. CHRIS SUTHERLAND HELPS TO EXPLAIN WHY MARIO'S MECHANICS ARE SUBLIME

It's hard to believe now, but Mario's jump was a platforming first when he and it were introduced in 1981's *Donkey Kong* coin-op, and his barrel-smashing hammer attack was equally novel. In his first solo title – *Mario Bros* – he could skid to a halt mid-run, and he swapped his hammer for heading the underside of platforms to flip foes before kicking them off the screen.

The mechanics in Mario's next outing were simpler, in that he used his jump in *Super Mario Bros* for the NES to deter foes as well as for platforming, which former Rare coder Chris Sutherland describes as an evolution. "In *Donkey Kong*, Mario would jump in an arc, but you had more control in *Super Mario Bros*. There was also risk/reward, because you had to get close enough to the enemies to jump on them, but if you mistimed it you might get hit. You had control over the height of the jump too, depending on how long you pressed the button. Then with Koopas, jumping on them knocked them to one side instead of destroying them. So the same move had various different outcomes."

Two games called *Super Mario Bros 2* followed, a harder *Super Mario Bros* and a *Mario* re-skin of an unrelated Nintendo title. Arguably, *Super Mario Bros* true sequel was *Super Mario Bros 3*, which gave Mario raccoon and hammer-based power suits. "I guess the suits were there to emphasise the moves the developers gave Mario, and they also provided entertainment value!" Chris beams. "But they could have easily transformed him into other forms, like in *Super Mario Bros Wonder* where he transforms into an elephant. The other alternative would have been to just give him the moves, but that would have been less cute and entertaining. Even then, something visual would still have been needed to let players know that he had them."

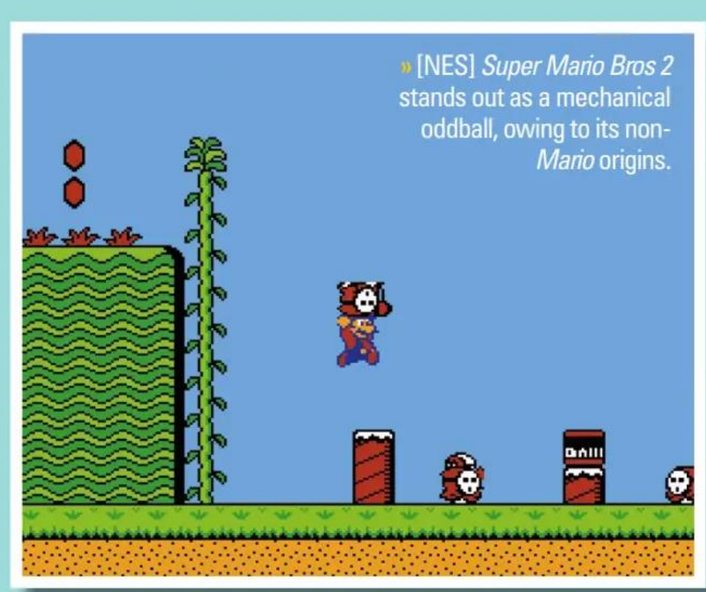
Subsequently, Mario swapped his NES fireball attack for bouncing balls at foes in the Game Boy launch title *Super Mario Land*. Despite the system's small, blurry monochrome screen, Mario was as responsive to control as ever, as Chris explains. "The simple backgrounds didn't become blurry when they scrolled, so you could easily see Mario jumping in front of them. Then, as long as the game had the analog-ness of the jump and the enemies that came along, it was all going to work. Those probably had to be a bit slower because of the size and clarity of the screen, but you still got the experience that you got on the NES, only it fitted in your pocket."

» [Nintendo 64] Expanding into 3D space gave Mario the need for plenty of new movement options.

The following year Mario helped launch the SNES with *Super Mario World*, where he could fly, glide and spin attack enemies by donning a cape. He could also float around by inflating into balloon form, spit fireballs in all directions once suitably powered-up and break rotating blocks when riding his new dinosaur pal Yoshi.

Then in the Game Boy sequel *Super Mario Land 2*, Mario got a bunny suit with related moves, and four years later *Super Mario 64* appeared. The N64 title was the first opportunity to control Mario in 3D, and it was nothing short of joyful, as Chris recalls. "The developers wanted to give you the ability to freely move around and explore, run in circles, jump and backflip, and do all the new moves.

"THE DEVELOPERS WANTED TO GIVE YOU THE ABILITY TO FREELY MOVE AROUND AND EXPLORE, RUN IN CIRCLES, JUMP AND BACKFLIP, AND DO ALL THE NEW MOVES"
CHRIS SUTHERLAND



» [NES] *Super Mario Bros 2* stands out as a mechanical oddball, owing to its non-*Mario* origins.

» [NES] The introduction of sloped surfaces gave Mario this sliding attack.

» [GameCube] Sometimes, Nintendo seeks to change up the 3D *Mario* formula by tweaking his moves.

It was an experience that nobody had ever had before, and because it was so enjoyable I don't think anybody minded that they hadn't replicated the 2D *Super Mario* games. Also, jumping on things in 3D could be frustrating, because judging depth is quite tricky, so they gave Mario attacks like punches instead."

The next *Super Mario* release *Super Mario Sunshine* saw its star equipped with a water-powered backpack. Using this device, Mario could clean-up sludge, and by attaching different nozzles he could hover, fire water at enemies and use its jet of water to propel himself at top speed.

A different approach was taken with *Super Mario Galaxy* for the Wii, where the console's nunchuk was used to guide Mario around spherical worlds. When shaken, it spun Mario into melee attacks that were equally good at shattering objects. He could also briefly become a super-fast, invincible rainbow-hued version of himself.

Later, the NES *Super Mario* games were channelled by the 2.5D titles *Super Mario 3D Land* and *Super Mario 3D World*. But Mario returned to three dimensions with *Super Mario Odyssey*, where he repurposed his cap to possess foes and use their abilities to solve puzzles and overcome obstacles.

Most recently, as if Mario hasn't been versatile enough over the years, 2023's *Super Mario Bros Wonder* promises to up the ante. His moves include capturing opponents in bubbles, and Mario's standard abilities can be altered by a Wonder Flower. Little wonder then, that playing as Mario remains such a pleasure.

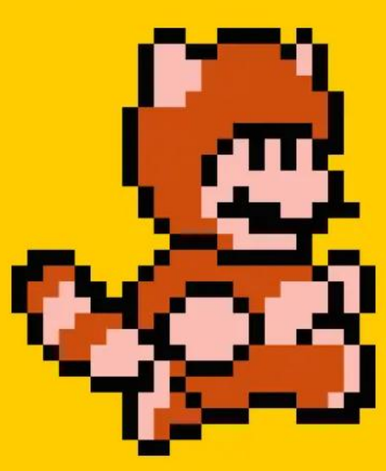
» [Wii U] Occasionally, whole level designs are based around a particular power-up's capabilities.

MARIO'S SUPER FORMS

THE ECLECTIC COSTUMES WORN BY THE POPULAR PLUMBER

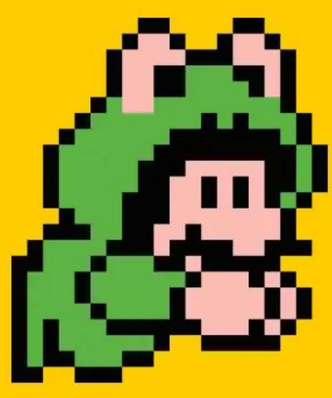
RACCOON MARIO

■ Sticking ears and a tail on Mario may seem gimmicky, but his Raccoon Suit comes in handy. Running and then wagging the tail allows Mario to fly short distances, and he can tail-whip enemies too.



TANOOKI MARIO

■ A tanooki is a Japanese raccoon dog, and Mario looks like one in this suit. It gives him the same abilities as his raccoon costume, plus he can turn into an invulnerable statue while wearing it.



FROG MARIO

■ Mario is a much faster and more agile swimmer in his frog outfit, even if the big frog eyes on its hood make him look silly. On land, his amphibian garb allows him to jump far higher than usual.

HAMMER MARIO

■ With his Hammer Suit, Mario gets endless hammers to throw at enemies, which he lobs in an arc instead of a straight line, so practice is required. It also protects him from fire if he crouches.

RAINBOW MARIO

■ Gained by collecting rainbow stars, this useful form makes Mario invincible, but there are caveats. He repels other power-ups while wearing it, and it speeds him up, making him harder to control.

METAL MARIO

■ When Mario dons a Metal Cap his body takes on its durable properties, which protects him from enemies. While in this form he can also withstand winds and breathe underwater for an unlimited amount of time.

CAPE MARIO

■ Like his raccoon and tanooki suits, Mario's cape lets him fly for short spells. He can also glide along entire levels with it if he uses it like a hang-glider, and it gives him a spin attack too.

BALLOON MARIO

■ Perhaps more of a look than a suit, Mario's balloon form causes him to temporarily inflate and float skywards. You can steer him left and right, which allows you to collect items and dodge foes.

BUNNY MARIO

■ The bunny ears on Mario's bunny suit aren't just cute, they also take him up into the air when he flaps them, and they let him hover there for some time. The outfit allows him to hop around too.

WING MARIO

■ More of a winged cap than an actual costume, Mario's Wing Suit gives him a minute of flight each time he does a triple jump. Additionally, the wings on the cap can be employed to slow his falls.

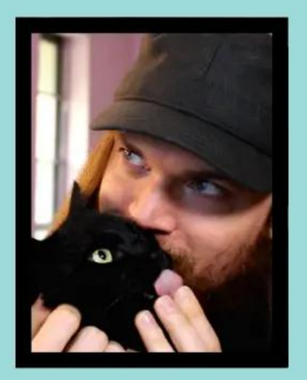
SUBLIME SOUNDS

NOBODY SHOULD OVERLOOK THE IMPORTANCE OF AUDIO IN THE MARIO SERIES AS IT'S ASSOCIATED WITH SOME OF THE MOST MEMORABLE GAME AUDIO OF ALL TIME, FROM UNFORGETTABLE UTTERANCES TO MUSIC THAT LINGERS IN YOUR BRAIN LONG AFTER THE CONSOLE IS TURNED OFF

» [Nintendo 64] What would Mario be without the familiar tones of Charles Martinet as his voice?

Here's a challenge – take a look at some of the screenshots here *without* any mental playback of the associated audio. Can you imagine the underground areas of *Super Mario Bros* without that recurring theme? Can you see *Super Mario 64*'s title screen without thinking "It's-a me, Mario"? If you can do that, we're impressed because we certainly can't. You can hardly blame us – even the Goombas hop to the beat in *Super Mario Bros*, and that speaks to the importance of audio as a part of the overall *Mario* experience.

The music of the *Super Mario Bros* series is extremely widely known – according to a paper titled *Video Game Music: Not Just Kid Stuff* by Matthew Belinkie of Yale University, 66% of American college students polled in 1999 could hum the main theme of *Super Mario Bros*. The ubiquity of the NES ensured that even people who didn't necessarily own a NES themselves were exposed to that tune, including Smooth McGroove, a YouTuber famed for his a capella covers of videogame music. "I first heard it at my next door neighbour's house, along with a few other NES classics they'd play over there," he says, citing it as his favourite piece of *Mario* music, explaining, "It's hard to beat the original because it set the stage for the rest!"



1985 was a year that saw a number of videogame compositions that set new standards for length and intricacy – on home computers you had the likes of Rob Hubbard's theme for *Monty On The Run*, and in arcades Hiroshi Kawaguchi's theme for *Space Harrier*. Koji Kondo's *Super Mario Bros* overworld theme certainly pushed those boundaries in the console space. Of course, the overworld music wasn't the only iconic piece in *Super Mario Bros* – just consider how often the underground theme has been reused and remixed. "It only makes sense to keep the themes going," says Smooth McGroove. "Bringing them back to life in new games with new twists has always been a delight for us fans."

In the early years, *Mario*'s soundtracks were not only musically satisfying but technologically impressive. The drum sounds in *Super Mario Bros 3* were atypical for the NES, and the realistic piano sounds in *Super Mario World* were unlike anything heard on a console up to that point. However, the musician wasn't nearly as famous as the music – in the aforementioned paper, Matthew Belinkie stated that none of the students knew the name of the veteran *Mario* series composer in 1999. Fortunately, that situation has changed these days. "Koji Kondo wrote *Mario* music with such light-hearted joy, and so it makes it fun to sing along to," says Smooth McGroove, namechecking the composer. "Many people have commented about that over the years as I've released different *Mario* tunes."

One game that Smooth McGroove has covered many tracks from is *Super Mario 64*. "It was the first 3D *Mario*, and the soundtrack was a masterpiece," he explains. "For a lot of people, it was their first introduction to Mario and so it holds a lot of fun memories. For me, it's another fantastic *Mario* soundtrack from my childhood." However, as great as the music is, *Super Mario 64*'s audio is perhaps most notable for introducing many players to Mario's voice, delivered by Charles Martinet. His whoops and yelps enhanced the joy inherent in steering Mario around his new 3D environments, and helped to add life to him as a character.

It's a point that Smooth McGroove also makes. "The sound effects are just as iconic as the music. The jump sound, the coin sounds, and his voice clips are almost universally recognisable," he says. We certainly think

"KOJI KONDO WROTE MARIO MUSIC WITH SUCH LIGHT-HEARTED JOY, AND SO IT MAKES IT FUN TO SING ALONG TO"
SMOOTH MCGROOVE

» [NES] Images can't emit audio, but this one comes as close as it gets.

» [NES] *Super Mario Bros 3* began a tradition by reprising the original underground theme.

» [DS] It's a shame these Goombas won't get to hop to the beat for much longer.

back fondly on Yoshi's bizarre SNES-era sound effects, and enjoy tormenting Toad a little in the modern games just because of his voice. Meanwhile, hearing the sound associated with picking up a mushroom instantly conveys the feeling of a power boost. We've even heard Bowser's roar being mentioned as the basis for a rather unflattering comparison to the sound of someone being rather unwell.

Of course, as the series has expanded, change has been inevitable. The number of audio staff has grown, with composers including Mahito Yokota and Toru Minegishi leaving their own mark on *Mario*'s audio landscape. Ever more elaborate arrangements have been performed, with recent highlights including *Super Mario Odyssey*'s *Jump Up, Super Star!*, used as the theme for an incredible *Donkey Kong*-inspired sequence. Charles Martinet has also officially retired as the voice of Mario to move into an ambassadorial role for the series, a move that felt unthinkable before it happened – but one that Nintendo marked appropriately, thanking the voice actor for his work over the years. That the fans showed an equal outpouring of love just demonstrates how important *Mario*'s soundscape really is.

MAGICAL MIXES

THERE HAVE BEEN SOME FANTASTIC REINTERPRETATIONS OF MARIO'S MUSIC OVER THE YEARS – HERE ARE OUR FAVOURITES

SUPER MARIO WORLD - OVERWORLD THEME ACAPELLA

youtu.be/ndiD8V7zpAs

■ Since *Super Mario World* was voted as the best game ever by **Retro Gamer** readers, lets start with the most memorable background music from the SNES classic. Smooth McGroove's interpretation of this theme is absolutely on point, and you can tell he's having a fantastic time singing it.

SUPERMARIOLAND

youtu.be/Rg56ft9pAsM

■ This isn't the work of a fan, but we'd be remiss not to include this Ambassadors Of Funk track – it was very likely the first track you heard that built on the music of Mario's adventures, after all. You can even listen to it guilt-free because this is an official upload

SUPER SPICE BROS 2

youtu.be/6Ajhzlq42f0

■ Here's one of the sillier ones – MowtenDoo's mash-up of *Bob-Omb Battlefield* and the Terry Crews adverts for Old Spice. The music is admirable, but what puts this one over the top as a favourite is its video, which adds a *Mario*-themed twist to the star's bizarre body wash antics.

SUPER MARIO ODYSSEY - JUMP UP, SUPER STAR! (PIANO COVER)

youtu.be/4JJFJsmliUU

■ As great as the full production in *Super Mario Odyssey* is, this version by Cateen manages to highlight the strength of the songwriting by stripping the tune back to a single instrument. There's some fantastic video editing to incorporate game footage alongside the music, too.

SUPER MARIO GALAXY - GUSTY GARDEN (BEN BRIGGS REMIX)

youtu.be/i7Qj7NRYCjM

■ *Super Mario Galaxy* has some absolutely beautiful music, but if you've ever wondered what it might sound like on an older console, this remix is for you. The track gets a chiptune makeover, giving it a nice retro feel without sacrificing any of its recognisable melody.

» [GameCube] The music in Delfino Plaza really captures the holiday mood *Super Mario Sunshine* aims for.

» [Switch] If you haven't seen this scene in *Super Mario Odyssey*, look it up now – it's brilliant.

VITAL VERSATILITY

MARIO'S PLATFORM GAMES ARE THE CORE OF THE SERIES, BUT THE STAR HAS DONE EVERYTHING FROM RACING HIS RIVALS TO THROWING FISTS WITH ICONS LIKE SONIC AND PAC-MAN. THAT ADAPTABILITY HAS HELPED TO ENSURE THAT THE PLUMBER'S NEXT OUTING IS NEVER FAR AWAY

They say that all the world's a stage, and Mario has certainly played a lot of roles over the years. After all, he wasn't even a plumber to begin with – he was a carpenter in *Donkey Kong*, and worked in factories in his Game & Watch years. In the 2012 *Game Informer* interview mentioned earlier in this feature, Shigeru Miyamoto explained that he sees the star and his supporting cast as akin to a troupe of actors. "If you're familiar with things like *Popeye* and some of the old comic characters, you would oftentimes see this cast of characters that takes on different roles depending on the comic or cartoon," he explained. "They might be a businessman in one [cartoon] or a pirate in another. Depending on the story that was being told, they would change roles."

That philosophy has ensured that storyline needs never get in the way of a fun concept, which has afforded Nintendo an extraordinary amount of flexibility when it comes to Mario's outings. "Quite early on, Mario would be assigned into other titles (mostly sports) and shoe-horned in some way which normalised Mario appearing in games that weren't his staple franchise," says Paul Murphy, author of *Gamebook: The Unofficial DMG Companion*. Indeed, plenty of games featured the moustachioed mascot on the box and in the game, without carrying the *Mario* branding. "Then *Super Mario Kart* arrived, showing that he could quite easily be assigned into other genres which were accepted by the Nintendo masses," Paul continues. "The rest, as they say, is history."

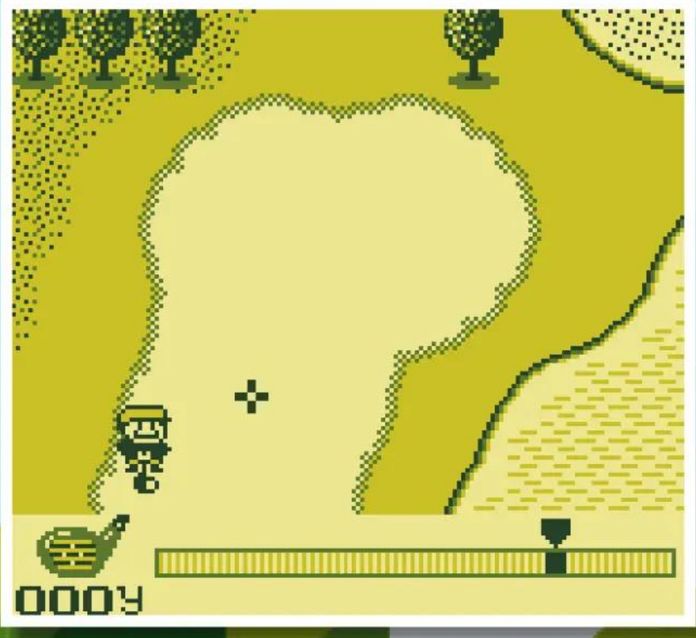
> **"MARIO'S UNIVERSE IS ALWAYS CHANGING AND ADAPTING BUT THE CORE OF THE SERIES ALWAYS STAYS TRUE"**
> **PAUL MURPHY**

The first entry in the kart-racing series established the concept of bringing Mario's extended iconography to these excursions into other genres. This was a fantastic way to convey the properties of items to existing fans – anyone familiar with Mario's previous adventures would understand that mushrooms are good and Koopa Shells hurt – but it was also a neat means of ensuring that the combat-heavy racing fit Nintendo's family friendly image. "I think the crux of Nintendo in general is that they put their own spin on genres sometimes, like *Splatoon* or *Pikmin* and you think it wouldn't work, but it's nailed every time," says Paul. "For me, this is what gives the audience the confidence to accept what is presented and give it a go."

That precedent carried over to Mario's many other spin-offs, too. *Paper Mario* might feature turn-based combat, but Mario still jumps on his enemies, and using a Boo power-up in *Mario Super Sluggers* will make your ball temporarily invisible. It doesn't matter that friends and foes sometimes pair up for a friendly game of tennis – the consistency is found in the way these games draw from the platform games. But for Paul, the most important thing carried over from the platform games is the quality they're reputed for. "Pixel-perfect control mechanics, interesting gimmicks thrown in, new characters added in with new worlds – Mario's universe is always changing and adapting but the core of the series always stays true," he tells us. "It hasn't always worked, and occasionally a stinker is thrown into the mix – but almost always it is fun."

Because of that, it's easy for Mario to star in your favourite games across a variety of genres, as Paul's list of favourite spin-offs shows. "*Mario's Picross* is a massive guilty pleasure, I probably spent more time playing that during the production of my Game Boy book than anything else," he admits. "*Mario*

» [Game Boy] It's Mario doing golf long before *Mario Golf* was a thing. Do you see?



» [SNES] *Mario Kart* is the most successful spin-off series, often outselling the platformers.

» [Nintendo 64] Everyone loves *Mario Party*, until the blisters set in. Wear those gloves, people.

» [Game Boy Color] As far as Nintendo is concerned, it doesn't matter why Mario and chums are playing tennis.

Kart goes without saying, even if my son's reflexes (and luck) outclass me time and again. It's my go-to family game and will keep you occupied for so long. *Super Mario Party* is the same and has a huge amount of playtime on my Switch," he adds. "I also must give special mention to *Paper Mario: The Origami King*. I know many folks think that *Thousand-Year Door* is the quintessential RPG for Mario enthusiasts, but I just loved the story."

Ultimately, one of the most thrilling things about Mario is that you never know where you'll see him next. We never would have guessed that he'd end up starring in a *Dance Dance Revolution* game or a turn-based tactics crossover with *Rayman*'s Rabbids, yet both happened. "It's a difficult thing to guess what Nintendo would and wouldn't do, or what would work or wouldn't," says Paul. "Would a *Mario* title work as a first-person adventure game? Could you see a Bethesda-level experience with Mario as the protagonist, with everything themed around the *Super Mario* universe? Mario in a *Souls*-like adventure? Or a post-apocalyptic universe?" These concepts might sound ludicrous on paper, but as Paul says, "I've written these things and am now wondering if they'd be fantastic. Wouldn't they?" With Nintendo involved, we'd never bet against it. ✱

» [GameCube] In *Paper Mario* games, Goombas can be perfectly friendly – just don't defraud them.

BY THE NUMBERS

SOME INTERESTING FACTS ABOUT MARIO'S EXTRA-CURRICULAR ADVENTURES

55,460,000

■ Copies of *Mario Kart 8 Deluxe* sold (as of 30 June 2023).

4,227

■ Swear words innovated as a result of blue shell attacks.

3

■ Nintendo consoles that have a *Mario Kart* as their best-selling game (Switch, Wii U, 3DS).

15

■ *Mario Golf* and *Mario Tennis* spin-offs developed by Camelot Software Planning.

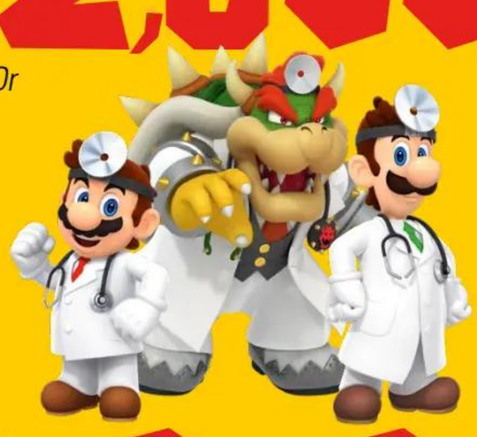
■ Years between the release dates of the two most recent *Mario Strikers* games.

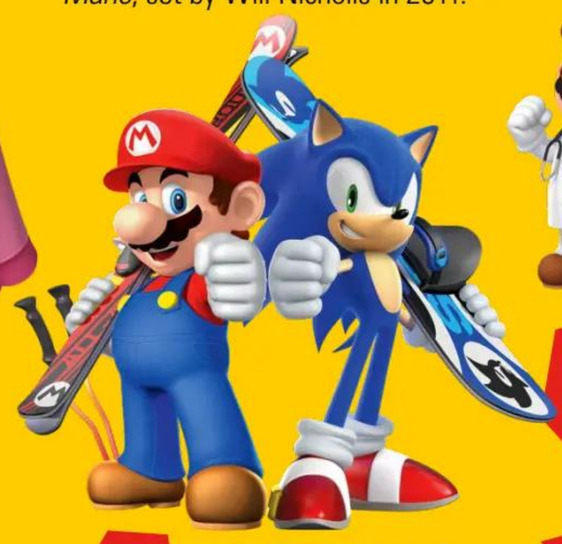
18,350,000

■ Copies of *Super Mario Party* sold, more than the two next best-selling *Mario Party* games combined (as of 30 June 2023).

2,922,600

■ Guinness World Record score for *Dr Mario*, set by Will Nicholls in 2011.





$80 MILLION

■ Cost of issuing protective gloves to buyers of *Mario Party*, following complaints about blisters.

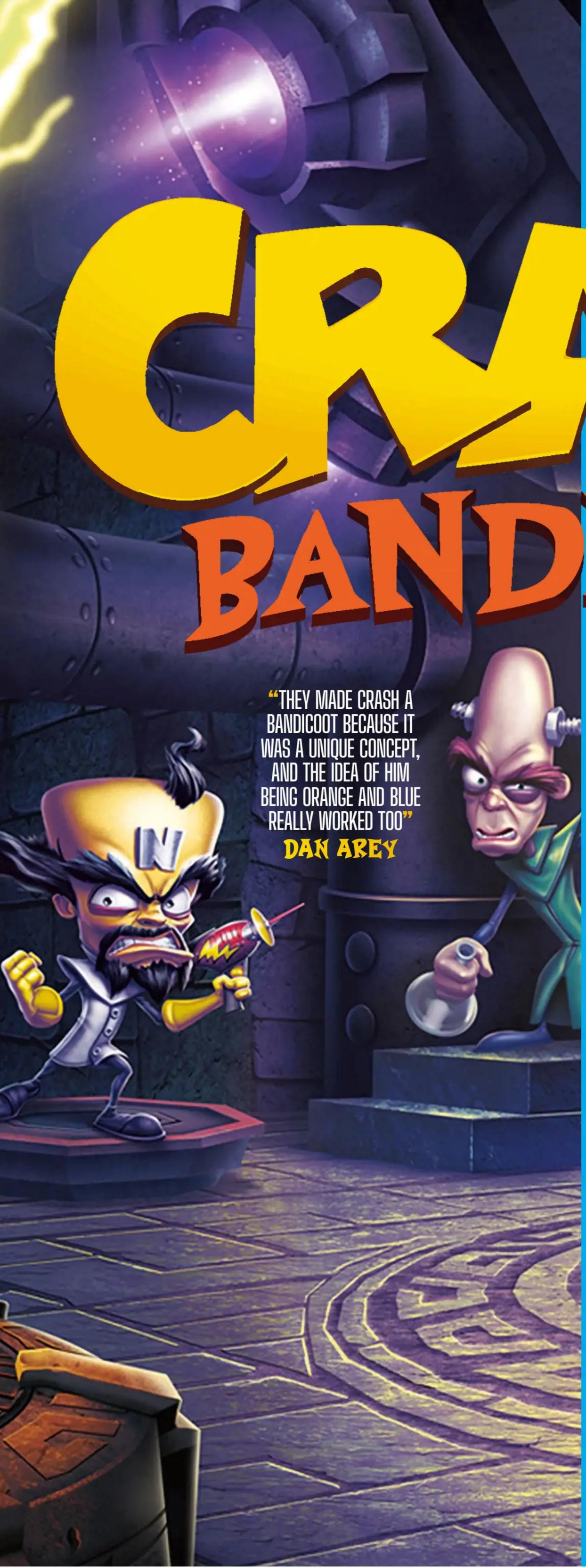
4

■ Times *Mario & Sonic At The Olympic Games* reached #1 on the UK charts.

99

■ Landmarks featured in the Mac version of *Mario Is Missing!*.

THE EVOLUTION OF CRASH BANDICOOT



"THEY MADE CRASH A BANDICOOT BECAUSE IT WAS A UNIQUE CONCEPT, AND THE IDEA OF HIM BEING ORANGE AND BLUE REALLY WORKED TOO"

DAN AREY

ONE OF THE FIRST POLYGON PLATFORMERS AND A DEFINING PLAYSTATION TITLE, CRASH BANDICOOT MARKED THE BEGINNING OF A FRANCHISE THAT CONTINUES TO THIS DAY. CREATIVES DAN AREY AND JON BURTON EXPLAIN HOW THE POPULAR SERIES EVOLVED

WORDS BY RORY MILNE

» Nerd Ninjas creative director Dan Arey worked on *Crash Bandicoot 2*, *Warped* and *Crash Team Racing*.

» Jon Burton had many roles on *Wrath Of Cortex* and oversaw *Twinsanity*, he's now CEO of 10:10 Games.

By the autumn of 1994, most popular gaming genres had begun to transition from sprites to polygons, with the likes of *Virtua Racing*, *Virtua Fighter* and *Descent* respectively showing how racing games, beat-'em-ups and shooters could work in 3D. Polygon platform games hadn't yet been tackled, however, and so when Naughty Dog founders Andy Gavin and Jason Rubin relocated their company from Boston to California they spent the trip coming up with concepts for a 3D platformer that would ultimately become *Crash Bandicoot*.

At almost exactly the same time, Nintendo began producing *Super Mario 64*. The two games were subsequently released in 1996 – *Crash* just months after *Mario*. But where Mario moved through a relatively open world, Crash took a more fixed-route approach.

Future Naughty Dog developer Dan Arey was working at Crystal Dynamics at the ▶

» [PlayStation] *Crash Bandicoot* was one of the first attempts to make a platformer work in 3D.

» [PlayStation] For those of you who were wondering, a bandicoot is a marsupial.

time, but he took close notice of both titles. "When *Mario 64* came out it shifted everybody's thinking. We all realised that 3D platforming was amazing, but also that you had to do it in a controlled way," Dan explains. "If you think about it, *Crash Bandicoot* was going down 3D roads with occasional 2D side-ways elements. But everything was very focussed in terms of mechanics, and that was really the brainchild of Naughty Dog founders Andy Gavin and Jason Rubin. We saw some early demos when I was at Crystal Dynamics, and we were asking ourselves how they were getting so many polygons on the PlayStation. What they had done was pre-calculate the polygons you couldn't see from a fixed-camera viewpoint, so it looked like there were many more polygons being pushed on the system than ever before."

A less-technical point of interest was Naughty Dog's hero, an obscure marsupial called a bandicoot, which as Dan points out was a choice based on a need for novelty. "You know it's interesting, Bob Rafei was the art director and of course Jason Rubin is an artist as well, but they had another artist who did some concepts for them, and then they ran with those," Dan recalls. "They made Crash a bandicoot because it was a unique concept, and the idea of him being orange and blue really worked too. That was just a wonderful colour combination. But a marsupial made sense, I think. Marsupials are down under, so you had this cool Australian connection. Then Jason Rubin had these wonderful characters like N Gin and all of the others. So that was all down to the ingenious creativity of Naughty Dog's art group and its director."

> "THERE WAS THIS COMMITMENT TO HUMOUR, AND THE BODY SLAM WAS JUST FUNNY. WE THOUGHT THAT WAS VERY WWE"
> **DAN AREY**

Equally important to *Crash Bandicoot*'s design was its inclusion of cargo crates, which as well as containing collectables and continues were fun to smash by spinning into them like Warner Bros' Tasmanian Devil. "Naughty Dog had a thing called adaptive difficulty, where the game got easier if you were struggling, but then it got harder if you got better at it," Dan observes. "A good example would be with the crates. Smashing them was how you got fruit, but that could also get you a continue point. The amazing thing was that the system knew how many times you were dying in any one level and where, and it could make those crates whatever it wanted them to be. So if you died a lot then a crate that would otherwise just be a bunch of fruit would be changed into a continue point, and that would let you get over a hump."

STAGES OF EVOLUTION:

SUPERB SPIN-OFFS: 1999-2002

FROM FRANTIC RACING TO CRAZY CHALLENGES

CRASH TEAM RACING

The first racer set in the *Crash Bandicoot* world features tracks based on the platformers that preceded it, and Crash, his allies and foes as contestants. The crates from the earlier titles are scattered around each course, each of which contains weapons and power-ups.

CRASH BASH

The insane challenges in *Crash Bash* range from chucking TNT at rivals to pushing them off icebergs! It's best played against other people, but the fact that it includes everything from hopping around on pogo sticks to driving tanks means that its solo mode is fun too.

CRASH BANDICOOT: THE HUGE ADVENTURE

Rather than attempting to design a 3D title for the Game Boy Advance, the designers of *The Huge Adventure* opted to make a 2D side-on platformer. In all other respects it feels like a *Crash* title, with fruit to collect, crates to smash and familiar foes to spin attack.

In the wake of its release, *Crash Bandicoot* reviewed well and topped the charts, and it ultimately became one of the PlayStation's best-selling titles. Its success ensured that a sequel was green lit, and the creation of *Crash Bandicoot 2* coincided with Dan joining Naughty Dog. Its levels were split between hubs that allowed any of their stages to be attempted in any order, a process that Naughty Dog dubbed "wide linear". "The idea of it being wide linear was so that we could still tell a story," Dan reasons. "With the *Crash Bandicoot* games we took great pride in storytelling. So the hub system allowed us to tell a story in little chunks, but it also allowed the player to pick which levels they wanted to play in which order for the first time. So if you had a hard time in a level you could come back to it later and go to another level. It opened up a lot of stuff like that, but we were still able to control that by which hub warps were active. So the hubs allowed players to make choices within a semi-linear system."

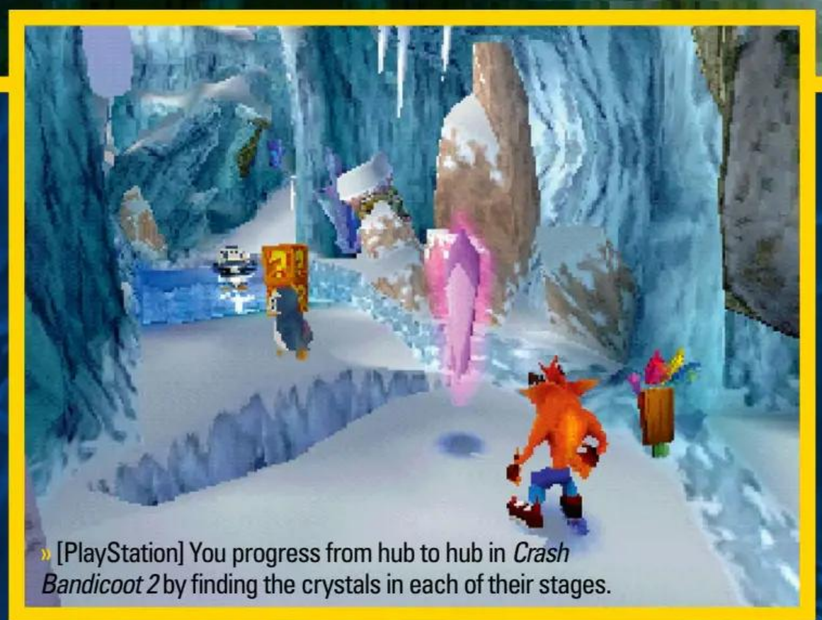
The decision to have hubs containing a selection of stages created a need for players to have a method to activate *new* hubs. The solution chosen was to require a crystal to be collected from each level in a hub to complete it, but some crystals were hidden down left or right forks in roads, meaning that if you took a wrong turn you had to replay that level. Dan recollects a number of advantages that came from this mechanic. "We were trying to evolve ▶

» [PlayStation] Smashing crates is fundamental to *Crash Bandicoot*; it's how you get collectables and mark continues.

» [PlayStation] *Crash Bandicoot*'s level structure is linear, at the end of each stage you warp to the next.

» [PlayStation] The high jump move introduced in *Crash Bandicoot 2* lets you leap higher and further than normal.

» [PlayStation] Hub areas where you can choose which level to play were introduced in *Crash Bandicoot 2*



» [PlayStation] You progress from hub to hub in *Crash Bandicoot 2* by finding the crystals in each of their stages.

▶ our system," Dan considers. "We really wanted people to explore; we wanted to include that opportunity. The levels took a lot of work to design, so we wanted to reuse them as much as possible. Replayability was also a big part of it, and we definitely wanted to have more player choice. We were trying to break the mould of linear gameplay. Everybody understood 2D linear gameplay where you can go up, down, left or right. But in 3D you naturally wanted to go in other directions and explore, although we weren't going to be wide open like *Mario 64*, because we wanted to control the gameplay. That was why we called it wide linear, because it allowed some choice."

As well as its hubs and junctions, *Crash Bandicoot 2* differentiated itself from its predecessor in other ways. Crash was given moves and attacks for the follow-up that he hadn't had in his original outing. More powerful jumps allowed for more verticality and further apart platforms to be incorporated into the sequel's levels, while body slam and sliding attacks allowed the hero to take out foes with lower or upper body armour from either above or below. "We wanted to make sure that you had those extra abilities to jump higher and longer distances," Dan reflects. "Another thing that was very important was the idea that everything was really precise. The high jump and double jump distances were very specifically planned. There were certain places that you could only reach if you

STAGES OF EVOLUTION:

SUPERB SPIN-OFFS: 2003-2004

PORTABLE ADVENTURES AND CRASH'S KART-BASED SEQUEL

CRASH BANDICOOT 2: N-TRANCED

The sequel to *The Huge Adventure* has nods to level designs and mechanics from *Warped* and *Wrath Of Cortex*. Although it's 2D, *N-Tranced* has into-the-screen and out-of-the-screen stages like *Huge Adventure*, and a cool jetpack level that recalls the Atari 2600 classic *HERO*.

CRASH NITRO KART

Essentially *Crash Team Racing* for the PS2, *Crash Nitro Kart* nonetheless differentiates itself in several respects. As well as new tracks it has new crates. Some of these activate boost pads and set traps for rivals, while others give you multiple power-ups and weapons.

CRASH BANDICOOT PURPLE: RIPTO'S RAMPAGE

One half of a *Spyro* crossover, *Ripto's Rampage* has 2D platforming like *The Huge Adventure*, but its main challenge comes from its minigames. Some of these channel coin-ops like *Breakout* and *Toobin'*, while others set tasks that range from shooting sheep to pumping iron.

used those. But more generally we were adding abilities to freshen things up. We had a fairly irreverent group, and we had a hilarious time. There was this commitment to humour, and the body slam was just funny. We thought that was very WWE. WWE was just this manic, crazy, over-the-top world that everybody loved at Naughty Dog, and we took the body slam from that."

This wacky humour, Crash's new moves and his sequel's hub level structure were applauded by both critics and gamers when *Crash Bandicoot 2: Cortex Strikes Back* came out. The follow-up received critical acclaim and sales in the millions, and so its developers quite reasonably took a break. With the exception of Dan, who instead put together a pitch for a third *Crash* title in which the marsupial hero travelled through time and around the globe.

"The idea for *Crash Bandicoot: Warped* came from the fact that I'm a time-travel nut!" Dan exclaims. "I started designing it from scratch when everybody else took a month off at the end of developing *Crash 2*. It allowed us to open up for a new look and have fun with that. We knew that there were going to be cool things to do like running along The Great Wall Of China, and that became one of the themes of that world. It really was an expansion of the universe, and it was just more fun, because we could put Crash in these unique situations with unique visuals. Also *Crash 2* was a global hit, so *Warped* had to be more inclusive of other parts of the world."

The innovative design for *Warped* also included stages where instead of playing as Crash players took charge of his little sister Coco. But rather than featuring platforming challenges like those that made up the majority of the game, Coco's levels instead involved manoeuvring her Jet Ski through pirate-infested waters, taking out blimps with her biplane, fighting a boss in outer space and riding her pet tiger over The Great Wall Of China. "It was fun adding another playable character to the world," Dan enthuses, "although there was a separation where, unlike Crash, Coco only appeared in non-platforming levels. That was about giving Coco her own flavour in the game. The World War I biplane gives me some PTSD! That was incredibly hard to develop because it was so fundamentally different from so much of the game. Coco riding on the tiger on The Great Wall Of China was one of the first endless runners, and we were doing that way back in 1998! So we were doing that early. It was really fun, force forward is always fun. It gave a different tone to the moment. You weren't in *full* control,

» [PlayStation] As with its predecessors, *Crash Bandicoot: Warped* has a number 2.5D stages mixed in with its fully 3D levels.

» [PlayStation] The mediaeval era at the start of *Crash Bandicoot: Warped* looks very different to the earlier games.

"COCO RIDING ON THE TIGER ON THE GREAT WALL OF CHINA WAS ONE OF THE FIRST ENDLESS RUNNERS, AND WE WERE DOING THAT WAY BACK IN 1998!"
DAN AREY

» [PlayStation] Non-platforming challenges like *Warped*'s motorbike racing are a staple of the series.

» [PlayStation 2] Flying a firefly into battle is just one of the challenges in *Wrath Of Cortex* where you're not on foot.

» [PlayStation 2] Riding out-of-control mine carts never gets old, and it works particularly well in *Wrath Of Cortex*.

» [PlayStation 2] In *Wrath Of Cortex*, Coco is playable in some platforming levels and she knows martial arts.

but you were in *some* control. You were trying to minimise your mistakes and you were trying to memorise the level. All of that internal progression was really fun."

Coco didn't get all the fun in *Warped*, however, as Crash was set far more out-there, over-the-top and high-octane tests of skill than he had in either of his previous appearances. Besides scuba diving, riding on a baby T-rex in prehistoric times and dispatching foes with a fruit bazooka, he also raced a motorbike along the highways of Fifties America in a leather bikers' jacket, which ultimately became the focus of the follow-up's box art. "I'm not even sure I can even defend giving Crash a bazooka!" Dan jokes. "But by the time of *Warped* we just wanted to try something new, and the T-rex and bazooka were what we went with. Then Crash's motorcycle. It's funny that it was put on the cover of the game, because it was really just a joke. You know, wouldn't it be fun to have Crash riding a motorcycle? It was crazy. But that's what happens when you've already done two games and you're just a little bit punch drunk by the third one!"

As things turned out, the third *Crash* game was also Naughty Dog's last core *Crash* title, although it created the protagonist's debut racer *Crash Team Racing* in parallel with *Warped*. Both games did well, with *Warped* in particular getting unanimous praise from reviewers and outselling its immediate predecessor. But after *Warped*, Naughty Dog moved onto other franchises, and Crash's next core title – *The Wrath Of Cortex* – was handled by Traveller's Tales instead. Coco returned, but unlike in *Warped* she had martial arts moves and faced platforming challenges, as former TT director Jon Burton notes. "I think Coco having unique moves certainly added more variety to the gameplay," Jon muses. "We were also keen to take the series forwards without reinventing the wheel, so we decided that having Coco in some platforming levels in *Wrath Of Cortex* as well as riding or flying around like she did in *Warped* was an obvious direction to take."

> "WE REALLY FELT THAT THE CRASH SERIES HAD TO MAKE THE LEAP INTO A MORE FREE-ROAMING DESIGN"
> JON BURTON

Of the many power-ups in *Wrath Of Cortex*, one of the coolest came in the form of footwear known as Sneak Shoes. These handy trainers allowed Crash to tiptoe over suspended bridges made from Nitro Crates without setting them off. However this explosive hazard was only found in certain bonus levels and not in the game's main stages, meaning that the Sneak Shoes didn't get a lot of use in those. Jon doesn't remember what the exact reason for this was, but he does have some theories. "It was probably felt that it could be too complex a puzzle for the main route," Jon ponders, "and that we should keep that reasonably easy and leave the more challenging puzzles for the bonus stages. Or it might have been because we were originally thinking about having the worlds played in any order, so we couldn't have a puzzle based on Sneak Shoes in the main levels if you hadn't already collected them. But honestly, it could even have been to do with the main stages largely having a third-person perspective and not a consistently side-on viewpoint like the bonus levels."

In addition to power-ups, *Wrath Of Cortex* boasted a wealth of vehicles for Crash and Coco to explore levels in that took their lead from earlier *Crash* titles while upping the ante. Of the aerial models chosen for the game, a mechanical firefly stood out for its originality, although *Wrath Of Cortex*'s one-person armed submarine ran it a close second. The task of designing the vehicles for *Wrath Of Cortex* fell to someone other than Jon, but he's fairly sure about how they came to be in the game and the benefits they brought. "I wasn't involved in those design choices directly," Jon clarifies, "but I think it was probably as simple as us asking our concept artist to come up with some flying vehicle ideas for *Wrath Of Cortex*, and then us looking them over and picking the ones that looked the most interesting. In sequels it's only natural to want to take something further or to have more of it than the original had. The obvious benefit of having those types of vehicles was that they made the game more varied, and they also helped to give it more interesting game mechanics."

As the previous core *Crash* games had done before it, *Crash Bandicoot:*

» [PlayStation 2] Unlike earlier titles, *Crash Twinsanity* has an open world where you have freedom to roam.

» [PlayStation 2] One of the characters you play as in *Crash Twinsanity* is villain Neo Cortex's talented niece Nina.

» [PlayStation 2] You have to work together with Crash's archenemy Cortex in a number of *Crash Twinsanity*'s levels.

STAGES OF EVOLUTION:

SUPERB SPIN-OFFS: 2005-2007

MORE OFFERINGS FROM THE ICONIC MARSUPIAL

CRASH TAG TEAM RACING

Far from just a kart racer, *Crash Tag Team Racing* distinguishes itself with a mechanic where you merge with an opponent and their vehicle, and get a mounted cannon to take out the other drivers with. It also has platforming and FPS minigames, and unlockable cartoons.

CRASH BOOM BANG!

Unusual in that progression relies on rolling dice to move between squares like in a board game, *Crash Boom Bang!* is essentially a series of minigames. The DS title's varied challenges include blowing into the system to inflate balloons and a stylus-based *Whack-A-Mole*.

CRASH OF THE TITANS

Part platformer/part beat-'em-up, *Crash Of The Titans* sets tasks such as collecting a substance called Mojo to earn new moves and defeating a set number of foes. There are also bosses called Titans that take some beating, but if you manage you can take control of them.

» [PC] Just one of Crash's newfound abilities in *Crash Bandicoot 4* is his talent for grinding on vines and rails.

» [PC] The power-ups in *Crash Bandicoot 4* include the temporary ability to make platforms solid or intangible.

» [PC] One of the most useful power-ups in *Crash Bandicoot 4* lets you spin-glide across great distances.

Wrath Of Cortex sold millions of copies. Critics highlighted its levels and vehicles, and particular mention was made of its PS2 visuals outdoing those of its PS1 predecessors by some considerable margin. Following its success, Traveller's Tales produced Crash's next core title *Crash Twinsanity*. Jon decided it should be more open world than pathway focussed, as the previous instalments had been, in order to allow players to more fully explore its universe and to keep the franchise fresh. "We really felt that the *Crash* series had to make the leap into a more free-roaming design," Jon remembers. "A lot of its contemporaries were already doing this, and we didn't want the gameplay in *Crash Twinsanity* – and by extension the series – to feel outdated."

Just as impressive as *Crash Twinsanity*'s scope for exploration was its focus on innovative character-based mechanics. As well as Crash, players could play as his archenemy Neo Cortex and Cortex's delinquent niece Nina. In the case of Neo, this involved firing laser guns at opponents and running away. When in control of his augmented younger relative players could utilise her extending arm to dispatch far-off foes or grapple hook far-off rooftops in order to jettison her forwards. Just as interesting were levels where Crash helped, humiliated and brawled with Cortex. "The design direction for all of that came

» [PC] An alternative universe version of Crash's girlfriend Tawna is playable in *Crash Bandicoot 4*.

from TT Oxford," Jon acknowledges. "It was a new team that we set up specifically to make *Crash Twinsanity*. They pitched me all of their ideas, and I loved the concepts around playing as and with Neo Cortex. I especially liked and encouraged the uneasy alliance formed between them when they teamed up."

Reviewers commended these ingenious mechanics when they rated *Twinsanity*. However, Traveller's Tales moved onto other franchises after its release in 2004. Numerous *Crash* spin-offs followed, including a remaster of the three original titles called *Crash Bandicoot: N Sane Trilogy*, but it took 16 years for another core title to appear.

With so much time having passed since *Crash Twinsanity*, its successor *Crash Bandicoot 4: It's About Time* was given an array of fresh mechanics. One obvious example being that the power-ups in the follow-up were granted by beings called

STAGES OF EVOLUTION:

SUPERB SPIN-OFFS: 2008-2010

MORE CRASH BANDICOOT OUTINGS

CRASH: MIND OVER MUTANT

Although based around missions as opposed to levels, *Mind Over Mutant* has similar combat and collectables to *Crash Of The Titans*. Its new features include character interaction, storing and then summoning defeated Titans, and power-ups such as spin-digging underground.

CRASH BANDICOOT NITRO KART 3D

In most respects, *Crash Bandicoot Nitro Kart 3D* is an iOS *Crash Team Racing*, where you race rivals from the *Crash* games and get weapons by smashing crates. It differs in that you accelerate automatically and steer by tilting your device, both of which work really well.

CRASH BANDICOOT NITRO KART 2

This *Crash Bandicoot Nitro Kart 3D* sequel doesn't mess too much with the formula of its popular predecessor, but it does add a number of new options. These include touchscreen controls as well as tilt steering, eliminator and mission modes, and multiplayer over Wi-Fi.

STAGES OF EVOLUTION:

SUPERB SPIN-OFFS: 2019-2023

THE MODERN ADVENTURES OF CRASH BANDICOOT

CRASH TEAM RACING NITRO-FUELED

If there's a racing equivalent of *N Sane Trilogy* then *Nitro-Fueled* is it. As well as remastering the original *Crash Team Racing* it adds courses and content from *Crash Nitro Kart* and *Crash Tag Team Racing*, with the end result being the ultimate *Crash* racing experience.

CRASH BANDICOOT: ON THE RUN!

A *Crash Bandicoot* endless runner seems appropriate given that the level where he's chased by a boulder in the original game was essentially a forerunner of the genre. *On The Run* adds to the format with *Crash* staples such as crate smashing, spin attacks and boss fights.

CRASH TEAM RUMBLE

The two teams in *Crash Team Rumble* are tasked with amassing Wumpa Fruit at drop-off points while stopping their rivals from doing the same. Strategy is added by the game's characters being suited to either banking fruit, blocking the opposition or unlocking power-ups.

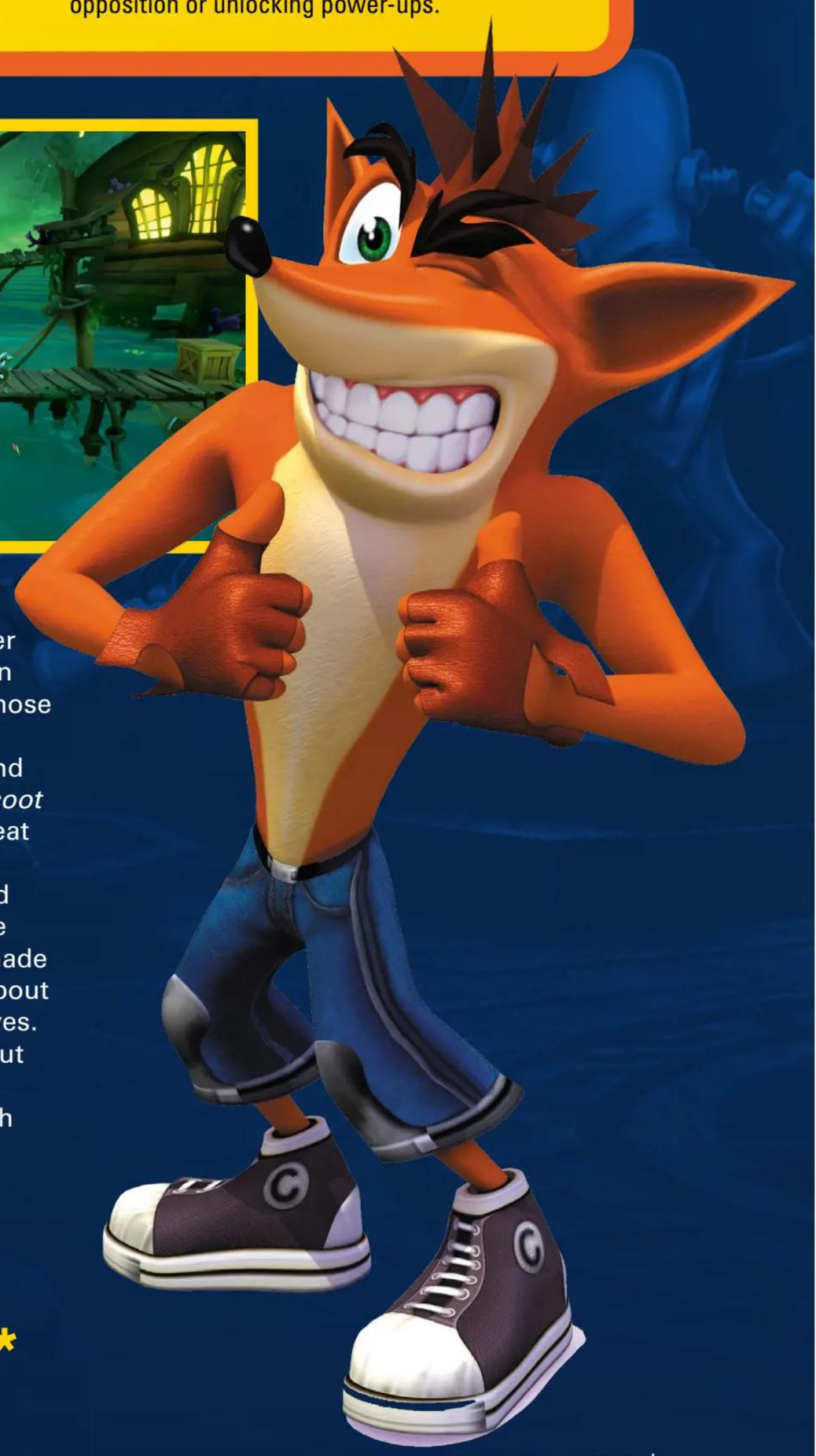
Quantum Masks, with their gifts allowing Crash to glide through the air, make objects tangible or intangible, slow time and reverse gravity. In a clever twist, these talents only became available when they were particularly useful.

Innovative challenges requiring players to learn new skills also played their part in giving *It's About Time* an up-to-date feel. One of the most memorable examples of this involved Crash grinding along everything from rusty girders to jungle vines parkour-style. To keep players on their toes, there were gaps to jump, and obstacles requiring Crash to temporarily hang onto rails instead of grinding on them or even jump onto parallel rails.

It's About Time also stood out for its playable characters. You played either Crash or Coco in most levels, but in others you controlled *Crash* villains Neo Cortex and Dingodile, and an alternative version of Crash's girlfriend Tawna. Cortex had a ray gun that turned foes into solid or bouncy platforms, Dingodile had a vacuum gun to suck up and fire out enemies and Tawna had a grappling hook that worked like Nina's in *Wrath Of Cortex*.

When *Crash Bandicoot 4: It's About Time* was released in 2020, reviewers responded positively to its new features and the game went on to top sales charts worldwide, much like the trilogy that had introduced *Crash Bandicoot* in the Nineties had done. Former Naughty Dog creative Dan Arey puts the appeal of those games and its marsupial hero down to narrative and aesthetics. "*Crash Bandicoot* was a whole bunch of great storytelling with some wonderful characters, and it got better and more interesting as the series progressed," Dan beams. "We made characters that you would really care about a lot, and we did that with their narratives. We were trying to make the games about an arc in their stories, where you could watch every cutscene and have as much fun doing that as you did playing the game. The titles were also driven by strong visuals. Jason Rubin was an artist at heart, and he wouldn't take no for an answer if there was a technical limitation. That was why the *Crash Bandicoot* games were so far ahead." ✱

> "I LOVED THE CONCEPTS AROUND PLAYING AS AND WITH NEO CORTEX. I ESPECIALLY LIKED AND ENCOURAGED THE UNEASY ALLIANCE FORMED BETWEEN THEM WHEN THEY TEAMED UP"
> JON BURTON



STAR WARS ULTIMATE GUIDE

DARK FORCES

WITH GEORGE LUCAS BUSY PLANNING THE NEXT STAGE OF HIS SCI-FI OPUS AND THE ALL-CONQUERING DOOM FRAGGING GAMERS EVERYWHERE, THE TIME WAS RIGHT FOR A FIRST-PERSON SHOOTER SET WITHIN THE STAR WARS UNIVERSE. WITH A NEW REMASTER RECENTLY RELEASED BY NIGHTDIVE STUDIOS, THE TIME IS ALSO RIGHT TO RETURN TO LUCASARTS' ICONIC GAME

WORDS BY GRAEME MASON

It's a long time ago: 1995. Plans are afoot to resurrect the *Star Wars* franchise in cinemas with the *Special Editions*, but it will be four years before fans can finally enjoy new material in the form of *Episode 1: The Phantom Menace*. Along with *Attack Of The Clones* and *The Revenge Of The Sith*, this was to be the start of *Star Wars*' much-maligned prequel trilogy; the pre-*New Hope* theme continued into the world of videogames as LucasArts released *Star Wars: Dark Forces* early in this year.

Dark Forces stars Kyle Katarn, an undercover rebel agent and ex-operative of the Imperial Special Operations Division. Driven by a hatred of the Rebel Alliance that supposedly killed his parents, Kyle plunges into the world of Imperial intelligence gathering and operations, slowly discovering the true nature of the Empire. Disillusioned, he realises it was not the Rebels behind his parents' deaths but the Empire itself, thanks to well-directed reports from a Rebellion undercover soldier, Jan Ors.

Then, disaster: the Empire captures Jan and tortures her as a spy. With her execution imminent, Kyle reveals his own colours, engineering Jan's escape from confinement and subsequent flight to a rebel base. Experienced in sabotage, combat and subterfuge, Kyle Katarn is now a vital, if slightly indifferent, cog in the Rebel Alliance. "The emotional manipulation he endured at the hands of the Empire has hardened him against causes," notes Jan Ors in the *Dark Forces* manual, "and made the idealistic, trusting young man into a deadly efficient saboteur whose loyalty must be earned rather than bought."

Dark Forces begins, mercurially, by asking the player their name as they assume the role of Kyle Katarn. This screen is the tactical display, and from here, you can create a whole roster of agents, each diligently infiltrating the Empire in the name of the Rebel Alliance. On the right side of this screen is the mission list. When Kyle completes a quest, it appears here, and he can replay each one at will. The

» [PC] Kyle has access to a variety of weapons, and they all feel satisfying to use.

"THERE WAS NOTHING QUITE LIKE IT TECHNICALLY – I RECALL THE SENSE OF BEING IMMERSED IN THAT WORLD"

LARRY KUPERMAN

» [PC] Secret Base, *Dark Forces*' opening level, features plenty of Imperials to gun down, as well as some precious plans to retrieve.

» [PC] Another Nineties FPS stalwart – conveyor belts.

» [PC] Q manipulates Captain Picard to turn his gun on William Riker. Q is very naughty.

"I WANTED TO DO A STAR WARS VERSION OF A 3D SHOOTER LIKE WOLFENSTEIN – DOOM HADN'T BEEN RELEASED AT THIS POINT"
DARON STINNETT

Special thanks to our interviewees. Restoration work of original *Dark Forces* art by Jan Hofmeister.

I FIND YOUR LACK OF TRIVIA DISTURBING

ESSENTIAL DARK FORCES FACTS

- *Dark Forces*' PC cheat modes are an homage to *Doom*'s. Each has the initials 'LA' (for LucasArts) preceding the code; all of *Doom*'s codes began with 'ID'.

- Kyle Katarn's blaster, the Bryar Pistol, makes its debut in *Dark Forces*. It inspired Cassian Andor's gun in the recent Disney *Star Wars* series, *Andor*.

- *Dark Forces*' Dark Troopers also appear in a Disney series, *The Mandalorian*, and in Dark Horse Comics' *Dark Empire* comic books. That's a lot of darkness.

- Clint Bajakian created *Dark Forces*' superb music and sound effects.

- The canonisation/non-canonisation of Kyle Katarn is a constant debate among fans. Initially, *Dark Forces* was developed outside the main *Star Wars* world before being assumed in, discarded by Disney, and then re-introduced (for some fans) after his inclusion in the *Star Wars Trading Card Game*.

- There are a handful of familiar locations from the movies, such as the industrial planet, Coruscant and a Star Destroyer.

- Kyle Katarn faces off only once against the Phase III Dark Trooper. Rom Mohc wears it in the game's finale.

- LucasArts' demo of *Dark Forces* (the first level, Secret Base) contains a brief scene of Kyle Katarn preparing his weapons. It was removed from the final game.

- In 1998, Kenner/Hasbro produced a Kyle Katarn action figure as part of its *Expanded Universe* range.

- The actor behind Kyle Katarn is the hard-working Nick Jameson, who also voiced Max in *Sam & Max Hit The Road*, among others.

- *Dark Forces* lifts some of its cutscenes from the *X-Wing* and *TIE Fighter* games.

» [PC] A Phase II Dark Trooper stalks Kyle Katarn.

▶ game thrusts the player straight into one of the most decisive missions in *Star Wars* history: locate and pilfer the plans to a moon-shaped space station capable of destroying whole planets with its powerful laser weapon. Kyle Katarn proves his mettle by swiping the Death Star blueprints while simultaneously condemning himself to be excised from official *Star Wars* canon upon the release of *Rogue One* in 2016.

The Death Star Plans are locked away at an Imperial Secret Base on the planet Danuta, where they await transport to Lord Vader. Very little is known about the layout of the base itself, so I'm afraid you will have to act as your own reconnaissance.
EASY
MED
HARD
CANCEL
OK

» [PC] Kyle's first mission is to steal the plans for the Empire's new battlestation.

Star Wars: Dark Forces uses a bespoke engine that LucasArts' in-house team developed. The result is a game that takes the template established by the classic *Doom* and improves various aspects. Unlike the anonymous Marine of id's game, Kyle Katarn can jump, crouch and look up and down. *Dark Forces*' advanced map also includes rooms-over-rooms and the occasional appearance of genuine 3D models alongside the then-common flat sprites. With the electronic rendition of the famous *Star Wars* music and an accurate portrayal of many enemies from the series, the result is a deeply involving adventure, a far cry from the Nintendo *Star Wars* platform games of a few years earlier. Additionally, each mission has a carefully devised structure and the whole game a consistent plot, driving Kyle and Jan across the galaxy.

> "WE REALISED WE NEEDED A FRESH CHARACTER SO WE COULD WRITE HIS STORY TO WRAP AROUND THE GAME"
> **DARON STINNETT**

In *Dark Forces*, each mission begins with Jan Ors dropping off Kyle Katarn at a designated area. Jan pilots The Moldy Crow, the beaten-up but trusty Corellian Engineering Corporation freighter assigned to the pair by the Rebel Alliance. After the success of the initial mission, *Dark Forces* recaps the events of *A New Hope* before Kyle is sent to the planet Talay to investigate a recent Imperial massacre. Dead and burned bodies litter the city of Tak, and the smoking remains evoke the demise of Luke Skywalker's Uncle Owen and Aunt Beru in *A New Hope*. Kyle fights to the Rebel base and discovers a massive Imperial Repeater Rifle, a weapon that's patently too large for a normal-sized human to wield. This gun is the evidence that proves the existence, or at least the development, of the Empire's Dark Trooper project. Throughout *Dark Forces*, Kyle Katarn, aided by Jan Ors, travels across space to discover more evidence of the Empire's nefarious plans to create an army of super-robots.

While his Force abilities and lightsaber skills might be some way off, Kyle Katarn is not defenceless against this assault of merciless Imperial aggression. The player begins with a modified version of the distinctly uncivilised K-16 Bryar Laser Pistol, a reliable yet slow weapon with high accuracy. Soon, Kyle will have his hands on a Stormtrooper E-11 Laser Rifle, an inelegant but effective rapid-fire gun that consumes ammo at a high rate. These are the primary armaments of the game, and as the player delves further into the world of *Dark Forces*, more weapons become available. Grenades are (inevitably) characterised by Thermal ▶

» [PC] The Dark Troopers prepare to descend on Tak.

» [PC] A disappointed Vader surveys the destruction of the Arc Hammer – Force Choke on standby.

DIRECTING DARK FORCES

DARON STINNETT, PROJECT LEADER ONE OF DARK FORCES, TAKES US THROUGH THE ORIGINS AND DEVELOPMENT OF THE FIRST STAR WARS FPS

HOW DID YOU START WORK AT LUCASARTS?
I was working at Spectrum Holobyte, running the Falcon project. A friend had left Spectrum and joined LucasArts and asked me to join him. I met them, and they said come on over, and you get to pick the project you want to build. That's when the *Dark Forces* project began.

WHAT WERE THE GAMING INFLUENCES BEHIND *DARK FORCES*?
I wanted to do a *Star Wars* version of a 3D shooter like *Wolfenstein – Doom* hadn't been released at this point. But it also went back to Spectrum Holobyte. We had a cockpit there with all the controls and a stereo system, and before I left, *X-Wing* came out. We immediately loaded it up into the cockpit, and that was where it really became exciting. Computers at the time couldn't do a very good job of rendering landscapes, but they could do space pretty well because the landscape was stars. The immersion of it being *Star Wars* and flying an X-Wing in that cockpit greatly impacted me – that was the genesis of *Dark Forces*.

HOW DIFFICULT WAS IT TO DESIGN THE ENGINE FROM THE GROUND UP?
That was Ray Gresko, starting from scratch. 3D calculations were well-known and understood – the question was how to do it in real-time, given the hardware we had at the time. The other big challenge was no one at LucasArts had 3D design experience. Fortunately, while at a film screening at Skywalker Ranch, someone mentioned they knew the head of architecture at UC Berkeley. Two of their students left their program and joined LucasArts as 3D world designers.

WHY DID YOU DECIDED TO USE A NEW PLAYER CHARACTER, KYLE KATARN?
We originally considered using Luke Skywalker, but then we realised it would lock us into his story, which was ultimately constructed for a movie. We realised we needed a fresh character so we could write his story to wrap around the game that we knew we could build. It was always understood that what we were doing was outside the official canon, which was better as we weren't restricted by what we could do.

WAS MULTIPLAYER EVER CONSIDERED?
We were pushing hard to get the game finished and launched. I remember the head of the studio asking me if we needed more time, which was crazy – game studios never asked you if you wanted more time! But we were ready to go, and while I think multiplayer would have been a great addition, it's not easy to just add as a layer on top – you had to think about it from the start [of development]. My concern was that by the time we went in and retrofitted multiplayer, it would put the schedule back, and we'd run the risk of other 3D shooters coming along with better rendering technology. And soon after, *Quake* came out with fully 3D graphics, and our tech would have looked poor.

ON THAT SUBJECT, THERE *ARE* SOME 3D MODELS IN *DARK FORCES*. HOW DID THEY END UP APPEARING IN THE GAME?
Our engine development actually began as fully 3D; we realised it wasn't going to work from a performance standpoint. From there, we created constraints to help optimise the rendering, like ensuring everything that was rendered was essentially vertical, all your edges and shapes just basically boxes. But it was still a 3D engine, and I believe we carefully picked some very empty spaces with limited sightlines to introduce these 3D robots. It was just to have something cool that people hadn't seen before.

DID YOU GET THE CHANCE TO SHOW *DARK FORCES* TO GEORGE LUCAS?
George had a party down at Disneyland to celebrate the opening of the *Indiana Jones* ride. I piggybacked on that, got some press for the game, and was showing George how to play it. He immediately started complaining about the violence, but it was done and going to market. Fortunately, it became the biggest seller for LucasArts at that point.

WHAT WAS IT LIKE DEVELOPING THE FIRST OFFICIAL *STAR WARS* GAME AT LUCASARTS?
There was this unwritten rule at LucasArts that we couldn't make *Star Wars* games. Everything had to be original stories and characters, and before *Dark Forces*, there had never been an internally developed *Star Wars* game. I remember tension from others, and maybe a little bit of frustration that we were able to go do it. But then, once *Dark Forces* was such a big success, the company was all in on doing *Star Wars*!

A NEW CAST

WHO'S WHO THAT'S NEW IN DARK FORCES

KYLE KATARN

■ Erstwhile Imperial special forces operative Kyle Katarn is the star of *Dark Forces*.

JAN ORS

That thing you found was a weapon of some sort -- too large for a human being to use. Most likely it's a prototype weapon for the Dark Trooper.
BACKGROUND

■ Jan Ors is Katarn's Rebel liaison before becoming his partner throughout *Dark Forces*.

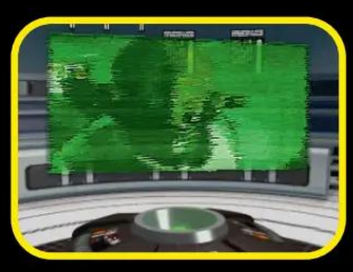
ROM MOHC

■ The general behind the Dark Trooper project, Rom Mohc battles Kyle in *Dark Forces*' conclusion.

MOFF REBUS

■ The oversized Imperial Repeater leads Kyle Katarn to paranoid weapon designer Moff Rebus.

ADMIRAL TOKA



■ Credited as 'Dying Rebel' in the game, Admiral Toka commanded Tak base before its destruction.

» [PC] Door locks and switches feature heavily in *Dark Forces*..

» [PC] *Dark Forces* encourages exploration – you might even find little treats such as this extra life.

THE BEST MISSIONS FROM DARK FORCES

RETRO GAMER'S FAVOURITE FIVE OF KYLE KATARN'S MISSIONS AGAINST THE EMPIRE

SECRET BASE

■ Kyle Katarn begins his saga with a pre-*New Hope* mission to steal the plans to the Empire's battle station, the Death Star. Numerous forces oppose him, but not as many as you'd expect in this gentle primer into the world of *Dark Forces*.

THE DETENTION CENTRE

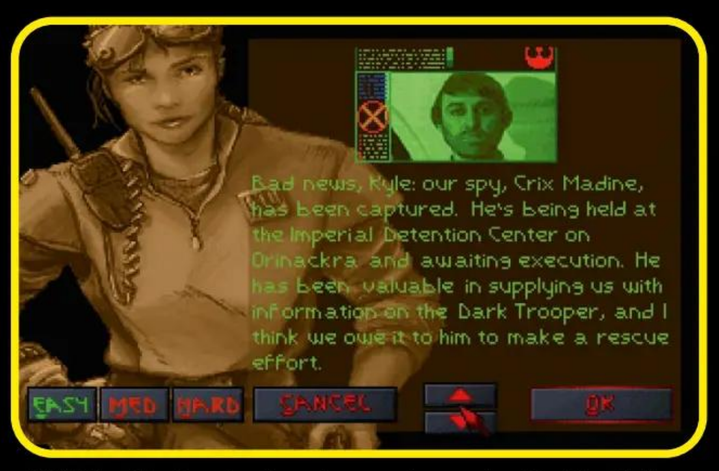
■ The Empire has captured the Rebels' inside man, Crix Madine, holding him at a Detention Centre on Orinackra as he awaits execution. Crix possesses valuable intel, giving Kyle no option but to attempt a daring rescue despite it not being quite what he had in mind.

NAR SHADDAA

■ The streets of Nar Shaddaa will have you consulting your map a lot, and you'll have a bunch of new enemies to combat in this mission. The Empire has put a bounty on Kyle's head, resulting in well-armed Gamorreans, Grans and Trandoshans joining the hunt for the Rebel spy.

JABBA'S REVENGE

■ Kyle's meddlings in the Dark Trooper project has unearthed a coalition between the Empire and the Hutts, with the latter supplying smuggling services to allow the project to go undetected. Captured by Jabba, Kyle faces off against a Kell Dragon at the start of this mission.


Bad news, Kyle: our spy, Crix Madine, has been captured. He's being held at the Imperial Detention Center on Orinackra and awaiting execution. He has been valuable in supplying us with information on the Dark Trooper, and I think we owe it to him to make a rescue effort.
EASY
MED
HARD
CANCEL
OK

» [PC] Marching into the detention area is not what I had in mind!

» [PC] The robotic Phase I Dark Trooper.

» [PC] Imperial commandos regularly hunt Kyle Katarn.

ARC HAMMER

■ Kyle heads to the source of the Dark Trooper project, the spaceship Arc Hammer. The hero fends off attacks from Imperial troops and Dark Troopers while planting the charges to disable the massive ship and end the Empire's devious plans once and for all.

▶ Detonators, and Kyle can also wield an Imperial Repeater Rifle – the standard size, presumably – a Fusion Cutter, Mortar Gun, and **Retro Gamer**'s particular favourite, the Stouker Concussion Rifle. Moreover, some weapons have an alternate fire: the Thermal Detonators set with a three-second delay (rather than explode on impact); the Imperial Repeater unleashes a trio of shots; while the Fusion Cutter disgorges all four of its barrels in a cone-shaped formation of fiery laser death. Each weapon is allocated a hot key (from one to zero), with the most basic – your fists – the only one that never runs out of ammunition.

The weapons of *Dark Forces* are fun, especially the movie-authentic E-11 Rifle; sadly, the enemy has them as well. Kyle Katarn is supposed to be a spy, so you'd be correct in assuming that *Dark Forces* involves sneaking around enemy bases or donning a Stormtrooper outfit (a la Luke Skywalker and Han Solo in *A New Hope*). Alas, the element of stealth hadn't quite infiltrated PC gaming at this point, leaving Kyle to go toe-to-toe with most of the Imperial forces. Unsurprisingly, Stormtroopers are the conventional opponent, and fortunately, their armour remains as wonky and paper-thin as in the movies. Skulking around glowing consoles and desks are the suited Imperial officers, often with their hands clenched behind their backs, patiently awaiting the completion of some dastardly plan. The other common enemy is the Imperial commando, their weird triangular helmets disguising an elite combat level and usually armed with Imperial Repeaters. Stinging Remotes, Viper Probe Droids (first memorably seen in *The Empire Strikes Back*) and jet-black IT-0 Interrogation Droids supplement the Empire's organic forces. Away from Imperials, *Dark Forces* features bounty hunters (most notably the three-eyed Grans and the reptilian Trandoshans), sewer-lurking Dianogas and Kell Dragons, the fearsome scaly pets of underworld boss Jabba The Hutt. Captured by Jabba outside Nar Shaddaa, Kyle faces off against Jabba's favourite Kell Dragon at the beginning of mission ten – with just his bare fists!

Finally, there are the Dark Troopers, and these robotic soldiers come in three flavours. The first is a skeletal prototype that wields a razor-sharp saw. In the mission to the Robotics Facility, Kyle encounters the second phase of Dark Trooper, still incomplete but now armed with a plasma-spitting Assault Cannon and jet pack. Kyle also has to combat the finished Trooper in the game's denouement, only more heavily armoured and with another attack consisting of yellowy fireballs.

> "...ONCE DARK FORCES WAS SUCH A BIG SUCCESS, THE COMPANY WAS ALL IN ON DOING STAR WARS!"
> **DARON STINNETT**

Fortunately, Kyle Katarn is not defenceless against ▶

» [PC] Grab the plans and run for it!

Dark Forces EX 1.0.567 Gamescom Demo - Work-In-Progress
'Kyle Katarn finds himself outnumbered 3 to 1 aboard the Imperial controlled fuel station, *Ergo*.'
1995-2023 ™ and © Lucasfilm Ltd.

» [PC] Nightdive has worked hard to ensure the remaster looks as authentic as possible.

Dark Forces EX 1.0.567 Gamescom Demo - Work-In-Progress
'Kyle Katarn, armed only with his fists, is forced to take on a Kell Dragon aboard the *Star Jewel*.'
1995-2023 ™ and © Lucasfilm Ltd.

» [PC] Don't expect new weapons, levels or monsters in Nightdive's remaster. Do expect fist fights with Kell Dragons.

REFINING DARK FORCES

RETRO GAMER CHATS TO NIGHTDIVE'S LARRY KUPERMAN AND MAX WAINE ABOUT THE STUDIO'S DARK FORCES REMASTER

"The original game [*Dark Forces*] was one that I played when it first came out," remembers Larry Kuperman, director of business development at Nightdive Studios. "I was not playing it with my dad, but with my son, which was kind of the opposite end of the spectrum. It was the first game that really thrust me into the world of *Star Wars*. I really felt like I was part of that." Larry also recalls the many technological advantages that LucasArts' game made over its competitors. "There was nothing quite like it technically – I recall the sense of being immersed in that world," he says. Committed to creating updates of classic retro games, Nightdive had already successfully updated Nineties games such as *Quake II*, *Blood* and *System Shock*; now its attention has turned to the LucasArts best-seller that helped propel *Star Wars* games to the masses. "[*Dark Forces*] was on our list as being a legendary game and deserved of remastering and brought to a new audience," Larry continues.

While Larry fondly looks back at *Dark Forces*, project lead Max Waine has a different perspective on the acclaimed game. "I was not born when *Dark Forces* first came out," he explains. "It's very interesting coming to the game [now]. Of course, I'm a big fan of the classic *Doom* games and I feel *Dark Forces* offers something very unique compared to those games." Despite coming to the game very late, Max clearly understands what makes *Dark Forces* so special. "I've come to have a great appreciation of the game having worked on it. It's a small technical marvel, what they managed to do at the time," he says. "It's a lot more of an immersive experience, I think. It really does feel like you're in different locations of the *Star Wars* universe."

Nightdive is promising a remaster of *Dark Forces* that, while bringing some aspects into the 21st century, retains the original's exact level layout and spirit. "It's really important to us that we remain faithful," says Larry, "In terms of changing the basics of the game, we stay away from that. We want people to enjoy the game as it was, under modern conditions." To satisfy the contemporary gamer, Nightdive is focussing on giving *Dark Forces* the 4K and widescreen treatment and refining its controls. "You don't paint a moustache on the Mona Lisa," grins Larry. "The game was complete and important as is."

Also included in the remaster will be newly rendered cutscenes. "The cutscenes have been re-rendered. They are faithful, they are a one-to-one duplicate of the original cutscene, but in higher resolution," continues Larry. "Alongside the newly rendered cutscenes drawn by our artists and rendered by our artists, we have, as an option, the originals for people who want to stick with those," adds Max.

Work on the remaster is progressing well, and Max is particularly impressed with how much of the original game had been archived. "We were fortunate enough that Disney and LucasArts of the time in the Nineties were very good at backing up their data, which meant we were able to start off with the source code, which isn't always the case," he says. "That means we didn't have to do any reverse engineering."

Nightdive did need some help though, particularly for the game's music. "We reached out to the key developer of a reverse-engineered source port [called] LuciusDXL, [their] source port is called the Force Engine," continues Max. "We reached out to them and we were able to use their code for the iMuse system that was LucasArts' music and sound system that they used in a bunch of games. That saved us a lot of effort." Larry also points out that there will be different music options available as well in the finished game. "We have a slightly enhanced version of [the soundtrack] but if you're an originalist you can also go back to the original format and have a MIDI-sounding soundtrack."

The key question for fans is whether *Dark Forces* could be the first in a line of *Star Wars* remasters. "We view this as our first effort, our opportunity to prove ourselves to the team at Disney/Lucasfilm," admits Larry. "There's a treasure trove of great content here, and given Nightdive's mission to bring back all the lost classics, we're hoping it's going to be a relationship that bears fruit in the future." Expect *Star Wars: Dark Forces Remaster* in early 2024 on PlayStation, Xbox, PC and Nintendo Switch. "Our concern is not timing," says Larry when the talk turned to a potential slip from late-2023, "our concern is to ship the best possible port of the game we can."

Nightdive stayed true to its promises and we thoroughly enjoyed its remaster, offering a 87% score in **RG**258.

WE'RE DOOMED

HOW DARK FORCES TOOK ON ID SOFTWARE'S GAME AND WON

ROOMS OVER ROOMS

■ While *Doom* had multiple floors, they were never directly over another room.

JUMP (AND CROUCH) FOR JOY

■ Kyle Katarn is an agile fellow, able to duck and jump around each environment.

DO LOOK UP

■ *Dark Forces* boasts freedom of vision, as well as movement. Great for sniping Stormtroopers.

AN ONGOING MISSION

■ All of *Dark Forces*' missions are linked with cutscenes as its story develops.

TRUE 3D

■ While much of the game is in 2.5D, some genuine 3D models are on show in *Dark Forces*.

ANIMATED EFFECTS

■ *Dark Forces* boasts some pioneering animated effects, such as this Death Star.

"OUR CONCERN IS NOT TIMING. OUR CONCERN IS TO SHIP THE BEST POSSIBLE PORT OF THE GAME WE CAN"

LARRY KUPERMAN

» [PC] If you're not keen on the new cutscenes Nightdive has created, there is an option to watch the originals.

'Kyle Katarn encounters a Trandoshan warrior aboard the Imperial fuel station, *Ergo*.'
1995-2023 ™ and © Lucasfilm Ltd.

» [PC] We really enjoyed our time with the remaster. It was given a physical release by Limited Run Games on various formats.

▶ this onslaught of laser fire, missiles and razor-sharp teeth. The rebel spy has a health counter and a shield for repelling enemy laser fire; both are boosted using Med Kits and Shield Units, respectively. Other useful items include a headlamp, ice cleats and an air mask – all will come in handy on specific missions.

In the finest tradition of early first-person shooters, there are keys to collect, secrets to discover and four prized bonus power-ups: Shield Supercharge turns Kyle into an invincible warrior; Revive completely restores his health and shields to the max; Life gives him another spare life, while Weapon Supercharge doubles his rate of fire. Hunting out all these items and using them wisely is essential to defeating the Empire's plans. Kyle has a PDA at his disposal to assist him in organising his inventory, along with mission updates and a map. Puzzles are also notably more prominent than in *Dark Forces*' peers, and the player will need all their wits about them if they are to succeed.

***Star Wars: Dark Forces* was released in the early winter of 1995 to critical and commercial acclaim, despite inevitable comparisons to another certain FPS.** "It's easily the best first-person shooter since *Doom*," proclaimed *PC Gamer* magazine, "and a must for *Star Wars* fans everywhere." *Dark Forces*' outstanding success led to a PlayStation version, ported by Big Bang Software and released almost two years later to a little more muted reception.

Nevertheless, its astounding triumph led to change inside LucasArts: no longer would the studio prohibit itself from developing *Star Wars*-related games (LucasArts' fellow Californians, Totally Games, created the revered *X-Wing* and *TIE Fighter* space sims), leading to the staggering achievement of the *Jedi Knight* series, the first of which was subtitled *Dark Forces II*. With technology developing quickly, *Jedi Knight* retains Kyle Katarn, pitching the character against the evil Sith Lord, Jerec. In the process, Kyle discovers his Jedi roots and – finally! – is able to wield a lightsaber and use mystical Jedi powers against his enemies.

But that's a story for another time. From Imperial agent to mercenary and ultimately Rebel hero, the saga of Kyle Katarn begins in *Dark Forces*. Unfairly dismissed as a mere '*Doom* clone' upon release, the game marks the beginning of an incredible adventure for its star and LucasArts itself and it's not surprising that news of Nightdive's incoming remaster of the classic game sent a wave of excitement across the internet. Jyn Erso and Cassian Andor can do one; as far as **Retro Gamer** is concerned, it was the magnificent Kyle Katarn who purloined the Death Star plans, thus initiating the most famous sci-fi saga in the galaxy. ✱

SOLID
GEAR

THE IMPACT OF METAL GEAR SOLID

KONAMI'S METAL GEAR SOLID INFILTRATED THE PLAYSTATION IN 1998, POPULARISING A GENRE WITH ITS BLEND OF TACTICAL ESPIONAGE ACTION AND CINEMATIC STORYTELLING. FROM CLONED BROTHERS AND CYBORG NINJAS TO EXCLAMATION MARKS AND CARDBOARD BOXES, RETRO GAMER DECODES THE MULTITUDE OF WAYS THAT HIDEO KOJIMA'S GAME LEFT ITS ENDURING FOOTPRINT IN THE SNOW ON THE GAMES INDUSTRY

WORDS BY ADAM BARNES

FRANCOIS COULON

» Francois was a creative director at Ubisoft and worked on *Splinter Cell*. He has also created visual effects for Sony's *Angry Birds* movies.

ANTONIO FREYRE

» Antonio has made several games inspired by *Metal Gear Solid* and is currently working on a new project called *As Time Surrenders*.

At the risk of giving the game an inflated Christly significance, it's impossible to think back on a time when *Metal Gear Solid* didn't exist. There is the now and the time Before Snake – and no in between. But that's the interesting thing, for most of the gaming world *Metal Gear Solid* was kind of a sudden divine bolt of lightning from out of nowhere.

The Western world hadn't really seen much of Hideo Kojima up until that point, what with a lot of his projects – however significant they are – sidelined onto doomed consoles or stuck without a localised version for years. Even the earlier *Metal Gear* games kind of just passed much of the world by without too much attention, and then, one day in 1997, everything changed. While footage of *Metal Gear Solid* had already been shown at Tokyo Game Show back in 1996 and earlier, it wasn't until E3 the following year that gamers really got a glimpse of what would go on to be one of the PlayStation's defining games. And from that point on, the hype was tangible.

"One thing you have to remember is that the first time the world saw this trailer, it was not just on some little TVs at the Konami booth," says Richard Ham, who was the design lead on the PlayStation's *Syphon Filter*. "This was on a gigantic jumbotron screen that towered over everything, I think it was the first time anything like that had ever happened at E3. And as I recall, every hour they would play that trailer, and for the entire convention this would become like appointment viewing – there'd be a huge crowd and so everyone would come and sit and watch. One thing I remember is being surrounded by a bunch of grizzled hardcore veterans screaming and whooping and hollering [as they] couldn't believe what they were seeing." The massive excitement surrounding that trailer even took Hideo Kojima by surprise, and naturally led Konami to push particularly hard on marketing *MGS* by the time it was released in 1998.

> "THE FIRST TRAILER WAS SHOWN ON A GIGANTIC JUMBOTRON SCREEN THAT TOWERED OVER EVERYTHING, I THINK IT WAS THE FIRST TIME ANYTHING LIKE THAT HAD EVER HAPPENED AT E3"
>
> **RICHARD HAM**

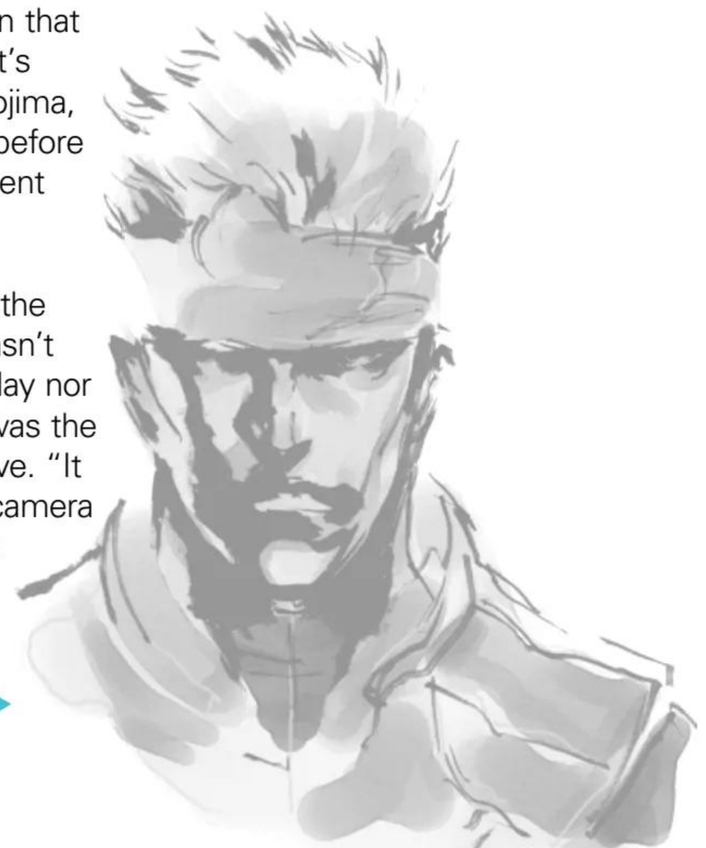
Over 12 million demo discs made it to players around the world, so there was a great deal of anticipation around what might well have felt like a debut game from Kojima, however inaccurate that was. "This is it. This is the surprise hit of 1998," read a standfirst within *CVG*'s February 1998 issue. "You can have your *Tekken* and *Resident Evil* sequels, but if you're after original software, watch this!"

Metal Gear Solid was featured in an article looking at the "Hot Games Of '98!" and given a detailed rundown of what the game was all about, focussing on its stealth-heavy gameplay, the high-tech espionage story and its fully 3D environment. Curiously, the article also drew close attention to its cinematic qualities. "When playing the game you could be mistaken that you're watching a movie," it read. "That's because the project's director, Hideo Kojima, actually wanted to be a movie director before he got interested in games. This is evident when you see the movement of all the characters and how enemies react."

Even before the game was released, the thing that stood out for most people wasn't just the 'thinking man's shooter' gameplay nor the top-tier 3D graphics, but instead it was the presentation of the game and its narrative. "It was so next-level, so many interesting camera angles for everything," says Richard. "It felt so cinematic. Cinematic gameplay is something I was trying very, very hard to achieve with *Syphon Filter*, with camera locks and being a fan

JEREMY BLAUSTEIN

» Jeremy has worked on a number of *Metal Gear* games, including *Metal Gear Solid 2: Sons Of Liberty*.



SOLID GEAR METAL

of John Woo and action cinema." *Syphon Filter*, in the end, offered a "radically different kind of experience" than *Metal Gear Solid*, but that trailer for all its clever presentation and pseudo-real E3 glamour was a concerning moment for Richard and the team at Bend Studios. "I was despairing," he says. "It looked like they were doing everything that we were trying to do, better."

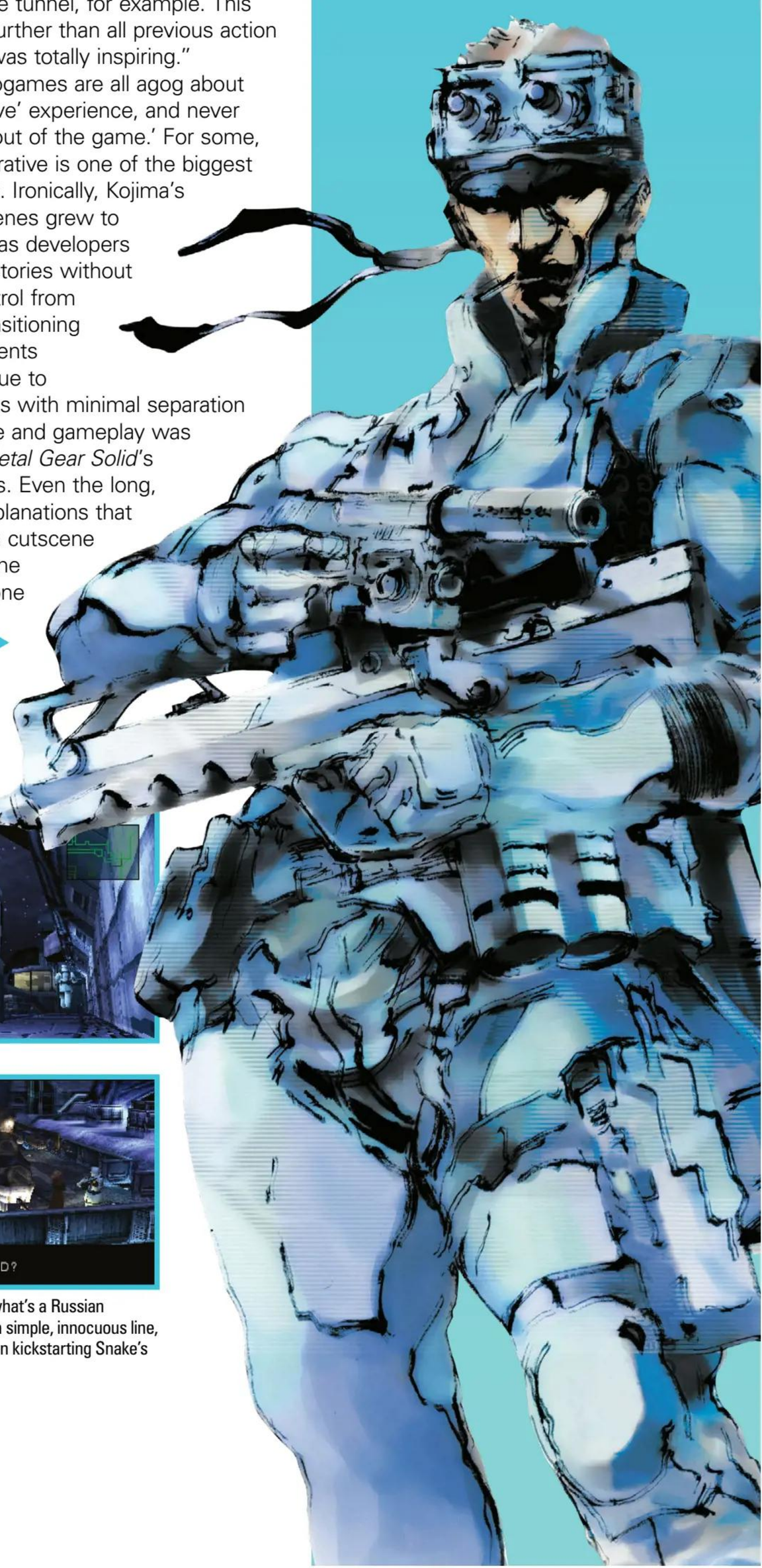
No one could deny that Kojima's love of movies had an important impact on the way he directed his games, but to overlook the pacing of the game would be discrediting the famed creator – who these days gets some unfair treatment from gamers for his almost bookish attention to replicating a film-like experience in his modern games. But back on the original PlayStation, a game that was like a movie was something to strive for and that was something that *Metal Gear Solid* provided in a way no other game had before.

"In 1998, many people in the industry were talking about the convergence between movie and videogames," says Francois Coulon, who was the creative director of *Splinter Cell*. "Probably because at that time, videogames were somehow jealous of the movie industry, feeling unfair not to be seen and perceived as an art as the movie industry could be. For a creative person trying to get videogames out of its cultural niche, seeing a sci-fi or heroic fantasy character in a two-minute-long, high-res cinematic before playing him as a ten-pixel high character for hours sounded totally wrong."

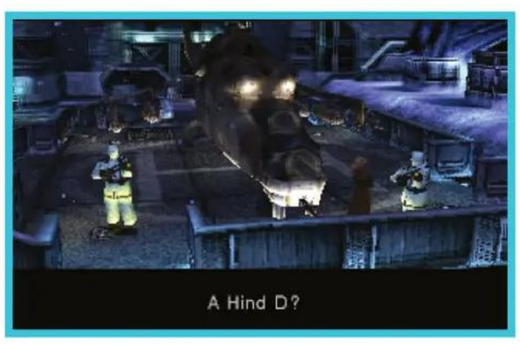
When *Final Fantasy VII* released on the PlayStation the year earlier, many had claimed that this was the best that videogames could look, but then the FMVs would end and you'd go right back to characters with cubic hands and three-pronged spikes for hair. *Metal Gear Solid* didn't have that separation: everything that was shown in a cutscene was then playable in the next gameplay moment, and while the game might not have aged particularly well in the visuals department, it helped to build that immersion – that cinematic experience – by never separating those two distinct parts of the game. "When you started *MGS*, you were launching a consistent visual experience," says Francois, "with the opening cinematic played from the engine, with the same resolution as the game, in an almost realistic setting." Francois adds that it wasn't just about being consistent with the graphics, however, because *MGS* transitioned from cutscene to gameplay without loading screens, visual swaps or cues to let the player know that the gameplay was coming. The player was always playing. "Going further into the game, it provided a fully action movie-like experience. "Think of the sequence with the jeep in the tunnel, for example. This was going much further than all previous action games. And that was totally inspiring."

Nowadays videogames are all agog about that 'fully immersive' experience, and never taking the player 'out of the game.' For some, exposition and narrative is one of the biggest ways of doing that. Ironically, Kojima's approach to cutscenes grew to become outdated as developers learnt how to tell stories without ever wresting control from the player, but transitioning from quieter moments of character dialogue to full-blown gunfights with minimal separation between storytime and gameplay was arguably one of *Metal Gear Solid*'s biggest innovations. Even the long, highly wrought explanations that accompanied each cutscene felt novel at the time and it drew everyone in, gamers and developers alike.

> "IN 1998, MANY PEOPLE IN THE INDUSTRY WERE TALKING ABOUT THE CONVERGENCE BETWEEN MOVIE AND VIDEOGAMES"
> FRANCOIS COULON



» [PlayStation] Each new area means pausing for a moment to observe the challenges you'll face, monitor patrols and look for items.



» [PlayStation] "Colonel, what's a Russian gunship doing here?" It's a simple, innocuous line, but it has a strong effect on kickstarting Snake's espionage adventure.

» [PlayStation] That *brrrinnkk* exclamation mark became one of gaming's most iconic sound effects, not least because of the sheer panic that followed.

» [PlayStation] Those moments of tension as you'd wait for a patrol to pass hoping you wouldn't be spotted were excellently executed.

HEROES AND VILLAINS

THE KEY CHARACTERS OF METAL GEAR SOLID

SOLID SNAKE

There's really not enough space to run through Solid Snake's complicated history, so here it is in brief: he's a super soldier clone of an even superer soldier known as Big Boss, he worked for special ops CIA unit FOXHOUND, his archenemy is his clone-brother Liquid Snake and his real name is David.

CAMPBELL

More frequently known as 'Colonel', Campbell was previously the commander of the elite special forces unit FOXHOUND of which Solid Snake was a member. In *Metal Gear Solid*, he's working with Snake to stop the renegade FOXHOUND from launching a nuclear missile.

MERYL

This feisty rookie soldier is actually the daughter of Colonel Campbell and was a part of FOXHOUND at Shadow Moses prior to the group's defection. She manages to get the drop on the famous Solid Snake after breaking them both out of a cell, and ends up – as with all good espionage tales – as Snake's love interest.

GREY FOX

As Grey Fox, Frank Jaegar was one of FOXHOUND's most decorated soldiers and needed to be rescued in *Metal Gear*. He was later experimented on, which led to him being fitted with a cybernetic exoskeleton, left him with permanent mental trauma and a desperate need for a 'til-the-death fight with Snake as Ninja.

LIQUID SNAKE

The binary opposite to Solid Snake (if it wasn't obvious), the pair share the same 'father' since they are both clones of Big Boss. Liquid wants to follow in his father's footsteps in creating a world where soldiers, like him, will always be needed, one of chaos and constant war.

MEI LING

Mei Ling doesn't actually have much impact on the events of the *Metal Gear Solid* story, but she was the contact you needed to reach out to whenever you wanted to save the game. Her random quotes and motivational speeches, combined with her cute mannerisms, made her a memorable character all the same.

OTACON

Hal Emmerich is the scientist responsible for the creation of Metal Gear REX (that's the one in *Metal Gear Solid*), but he's forced to work on it under heavy guard in the game and pees his pants when faced with Ninja. His codename is a portmanteau of "otaku convention", in case you didn't realise he was a nerd.

REVOLVER OCELOT

As the first boss fight in the game, you'd be forgiven for thinking that Ocelot doesn't make it to the credits. But in fact, he's the only FOXHOUND member who survives and has, in fact, been working behind the scenes on his own secret government-controlled agenda. He went on to become a fan favourite and has been a significant part of the story ever since.

MASTER MILLER

First appearing in *Metal Gear 2* and having a very significant role to play in later games, Kazuhira 'Master' Miller is a survival expert and offers Snake words of advice (gameplay tips). Kojima likely didn't anticipate that Kaz would prove to be so popular, otherwise he might not have had him be dead throughout the whole of *Metal Gear Solid*.

» [PlayStation] Even at the time *Metal Gear Solid*'s drawn-out moments of exposition felt like a drag, but the story was so engulfing it was worth it.

REMARKABLE INNOVATIONS

HOW METAL GEAR SOLID STOOD APART FROM ITS PEERS

EVERYTHING IN-ENGINE

■ Throughout the Nineties as games began to explore what 3D could do, a mix of pre-rendered video clips and static-camera moments were the only way to do exposition and narrative beats. *Metal Gear Solid* did everything in its engine so there was no separation, which meant a more immersive way of presenting the narrative during play.

LAYERED DETECTION

■ *Metal Gear Solid* released the same year as *Thief: The Dark Project*, *Tenchu: Stealth Assassins* and *Commandos: Behind Enemy Lines*, each handling stealth in their own pioneering ways. *Metal Gear Solid* had a more detail-orientated approach, such as detection through footprints, stepping into puddles and showing your breath in the cold Alaskan air.

CODEC

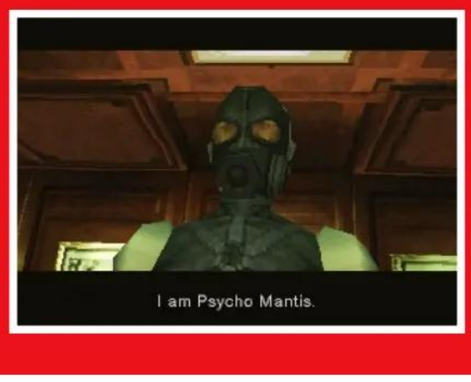
■ Being that Snake was a lone infiltrator, Kojima needed a way to provide exposition and game direction without any in-map NPCs to interact with. Thus the Codec was born, an in-ear communication tool that has since led to equivalent one-way communication means that guide the player around any modern game.

PROFESSIONAL VOICE ACTING

■ For the most part, VA in gaming was either in line with the original *Resident Evil*'s in terms of quality, or non-existent. *MGS* certainly wasn't the first game with high-quality voice acting, but consistent quality with an engrossing narrative proved just how important good quality voice acting was cinematic videogames.

META GAMEPLAY

■ Breaking the fourth wall with certain gameplay elements – in particular the Psycho Mantis fight – had a memorable impact on the player's experience. Few games have included such meta gameplay elements, but it has been perhaps the most innovative aspect of Kojima's work over the years.



Naturally all of these attempts to ape cinema would be for naught if there wasn't a story worth telling, and in that sense *Metal Gear Solid* really stood out among the crowd. The industry was still trying to figure out strong narratives for a videogame, and while the PlayStation had already had some flashes of brilliance in this regard, *MGS* was on a whole new level. "I think the story itself is a very simple one," says Jeremy Blaustein, who had worked on the original *MGS* as a translator at Konami. "Save the girl and save the day. It's a classic spy story or an adventure story." And he's not wrong, the tale itself is not so complicated: a hardened war veteran is sent behind enemy lines without any sanctions to single-handedly stop a nuclear launch, it's the plot of practically every Eighties action movie.

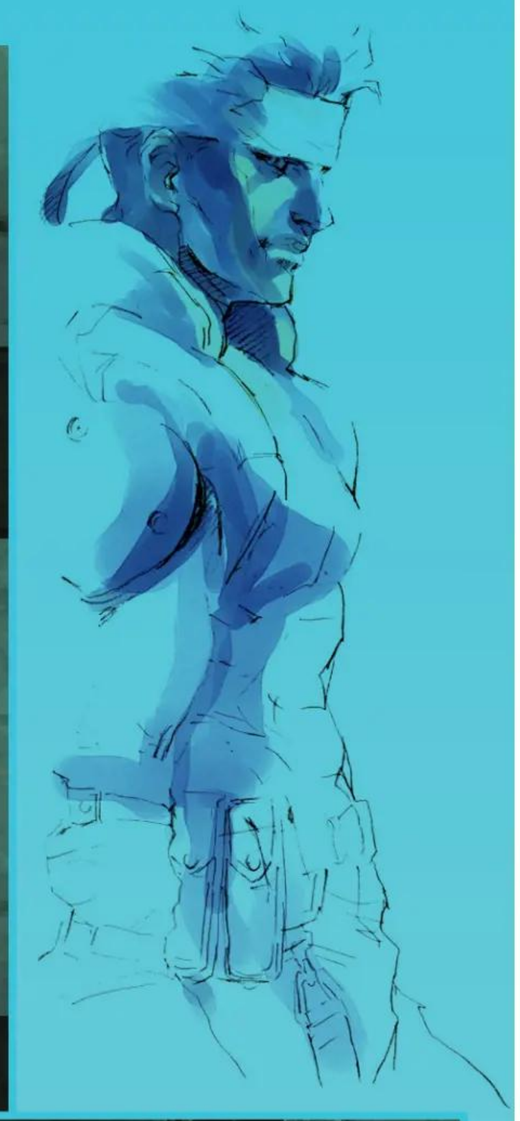
But it was the multiple layers to the story that made it enthralling, the unravelling of secrets and the way the distinct characters interacted with one another. "I think that the characters are very interesting and that is one of the most compelling aspects of it," adds Jeremy. "I tried to give each character a unique voice and point of view after seeing how much Mr Kojima had worked to do the same thing in Japanese."

Even as the series rolled on, memories of those more iconic conversations – the Master Miller reveal, for example – are tied to the overall experience of playing *Metal Gear Solid*, in part because it was a first time meeting these unique personalities, in part because of

» [PlayStation] The guards might not have been the most attentive in the world, but they were utilised with a lot of variety.

» [PlayStation] The CODEC was a great way of getting sudden bursts of narrative, or just for helping you if you were lost about where to go or what to do.

» [PlayStation] Each boss fight was unique and built with a specific solution in mind and everything was designed around it for the encounter.



> "I TRIED TO GIVE EACH CHARACTER A UNIQUE VOICE AND POINT OF VIEW AFTER SEEING HOW MUCH MR KOJIMA HAD WORKED TO DO THE SAME THING IN JAPANESE"
>
> **JEREMY BLAUSTEIN**

the piecemeal answering of hidden agendas and mysteries, but also very much because of their quippy dialogue and professional voice acting. In fact, voice-over was just not a common practice at that point in time, less so to the standard that Konami put into the game. David Hayter became iconic as the voice of Solid Snake, and from there one of the PlayStation's most recognisable characters. "I always viewed Solid Snake as an antihero," says Jeremy. "That's why in my mind the choice to make him sound like Clint Eastwood was obvious. I wanted him raspy and tired of war, and someone burned out. In my mind, the Clint Eastwood character fit the bill exactly."

For all this talk of battle-weariness and nuclear war, however, let's not forget that this was very much a game with a sense of humour. If there was a dramatic DARPA Chief death, it was very shortly countered by an equally tongue-in-cheek retort (and accommodating camera focus) about Meryl's behind. "The characters are very cartoonish in a fun way," says Jeremy, "but the setting is very realistic. It was my feeling that a realistic setting was necessary in order to maintain the feeling of authenticity that would allow for such cartoonish characters to be accepted without being laughed at."

Genetically modified soldiers, nanomachines, cloaking devices, cybernetic ninjas and of course a stomping nuclear mech were just some of the far-flung pseudo sci-fi that *Metal Gear Solid* touched on, and that's nothing considering the route that the series took in the long term. But all of it tied into fairly level-headed metaphors, and Kojima definitely had things to say about war, its impact on society and even its effects at an individual human level. "Do you think love can bloom even on the battlefield?" Dr Hal Emmeric, better known as Otacon, once posed to Snake in the game. It's a memetic line and one that drew attention for its cheesiness, but it's a good example of the varied threads that Kojima wanted to pull on with this cast of characters.

It all added a richness to the story, and that's even before discussing its more supernatural elements: a wolf-mother sniper, a shamanistic raven-father toting a gatling gun, a telepathetic lunatic with a gas mask, all of it rounded out by a fistfight to the death between two cloned super soldiers. Read a string of words like that and you'd be forgiven for snorting at *MGS*, but its presentation, its cinematic narrative and the deftness with which the ▶

METAL GEAR SOLID

STEALTHY BEDMATES

THE GAMES THAT SNAKE'S CAPERS INFLUENCED

SPLINTER CELL

■ While there were no direct elements taken from *Metal Gear Solid* into *Splinter Cell*, Kojima's work was an influence on Francois Coulon in his approach to directing the Ubisoft stealth series. Following the same desire for a cinematic experience and keeping the player in-game was critical.

UNDETECTED

■ One of Antonio Freyre's games, *Undetected* wears its *Metal Gear Solid* inspiration on its sleeve from its top-down camera perspective to item picks-up and character movement. That's not to say that it's a game without its own interesting ideas or elements, of course, but fans of Kojima's work will want to check this out.

UNMETAL

■ While the art style is more in line with the original *Metal Gear* games rather than the 3D *Solid* versions, *UnMetal* plays with the *MGS* approach to stealth in novel ways – such as being able to craft together seemingly random items for otherwise powerful gadgets. It's a game with a sense of humour, too, an important part of the *MGS* experience.

game handled its brevity directly alongside its more poignant topics made it one of the most compelling games on the PlayStation. "Another thing that I really do think is incredibly important about *Metal Gear* is its absolutely odd, quirky sense of humour," says Richard. "It's the thing that they kept doubling down on that pretty much nobody else does. It's just fundamentally *weird* that a cardboard box is your most powerful weapon in the game, that's just *strange*, but they don't care. They lean into it, they find the funny, and it's just an oddball mix of stuff."

How many games can say they have universally changed the appreciation of the humble cardboard box? It might be ridiculous to think of the world's most famous infiltrator hiding in a cardboard box, but it perhaps highlights *Metal Gear* at its best, just as Richard suggests. It's all very silly, at the heart of it, portrayed through an oh-so-sincere lens, so the idea of a cardboard box being the greatest asset for a sneaking mission just makes sense. The box became so iconic that it evolved just as much as the series did, while countless memes surfaced around it and the team at Konami found fun ways to include knowing in-jokes as the series grew over the years. But the gameplay wasn't all military-grade packing solutions.

» [PlayStation] Even the unique members of FOXHOUND, which were really only there as boss encounters, had a lot of individual personality about them.

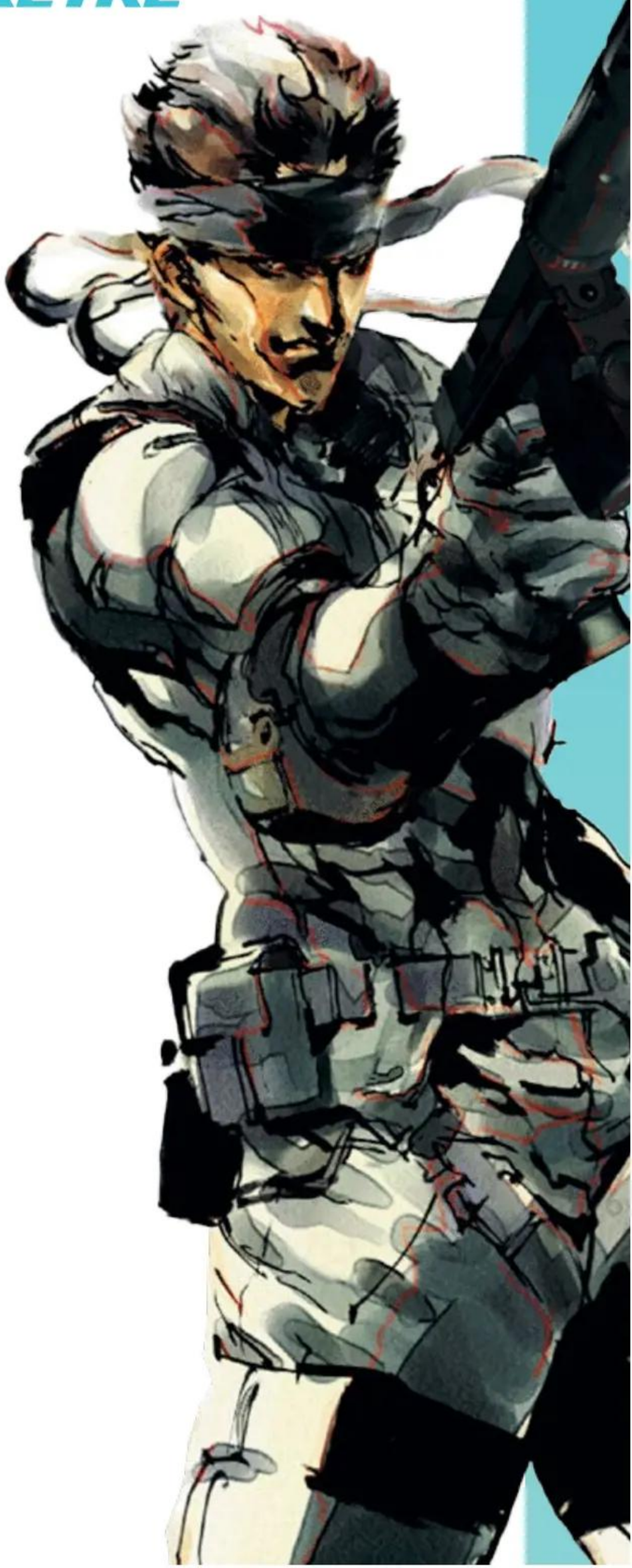
"Most people would say the story or setpieces [are the most inspiring parts of *MGS*], which I also love, but it is the refinement of the stealth gameplay that really sticks with me," says Antonio Freyre, an indie developer whose most recent game is inspired by the *Metal Gear* series. "No other game has been able to get to that quality and elegant simplicity that the *MGS* games can do."

> "NO OTHER GAME HAS BEEN ABLE TO GET TO THAT QUALITY AND ELEGANT SIMPLICITY IN STEALTH THAT THE MGS GAMES CAN DO"
> ANTONIO FREYRE

Certainly as far as stealth gameplay goes, *Metal Gear Solid* is not overly complicated: watch the minimap, avoid those cones of vision and if you get spotted go and hide under a truck until everyone completely forgets you were there. It's a permissive game, actually, Game Over ("SNAAAAAKKKE!") simply drops you right back at the start of the room where you entered, there's no traipsing back from your last save point or having to repeat a half hour of gameplay. But there are layers to it: footprints in the snow or the sounds of your steps on grated floors could give you away, smoking can help you spot infrared tripwires and there's usually plenty of things to crawl under and hide. At the time players were astounded by the ability to rap on walls to intentionally draw a guard's attention, luring them from their patrol routes to allow Snake to knock them out – or simply bypass them from a different perspective.

"The first time I saw *Metal Gear Solid* was at a Blockbuster," adds Antonio. "They had the demo to play in the store. I didn't understand English back then so I had no clue what to do. I was stuck and couldn't get past the [starting] Cavern area. Every time we went to Blockbuster, I'd try it again. I was captivated by this strange game where I had to hide."

For the first time, players were asked to *not* fire a weapon – if they could help it – and



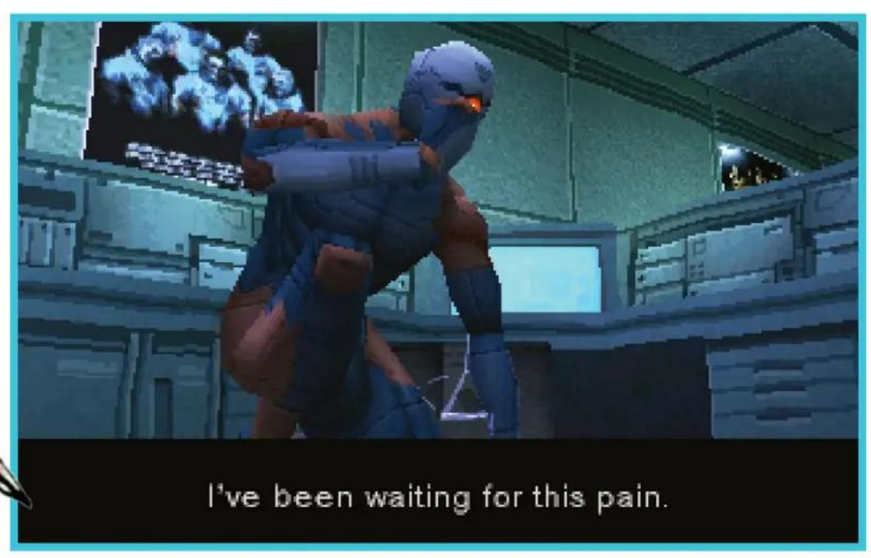
AS TIME SURRENDERS

■ The latest project from Antonio Freyre takes more influence from *Snake Eater* and *Ground Zeroes* than the original, but it's set in the same universe as *Undetected* and offers a decidedly more bleak vibe than Kojima's work. It's early on in development, but it's an exciting one for *Metal Gear Solid* players to keep an eye on.

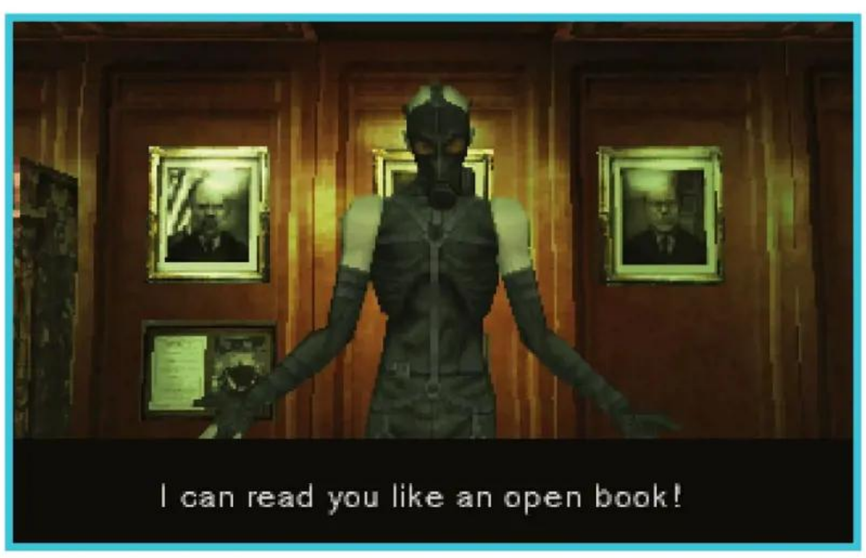
SYPHON FILTER

■ Development of *Syphon Filter* occurred simultaneously and completely independently to *Metal Gear Solid*, but insider info meant Richard Ham and Bend Studios could work to distance itself from Konami's game and ultimately come up with something better, more refined and more distinct than it might've been otherwise.

» [PlayStation] In this moment you'll hear a lot of creepy mutterings to create a vibe. Those are actually the names of train stations in Tokyo.



» [PlayStation] Everyone has their personal favourite boss fight, but this one against Cyborg Ninja is S-tier in part thanks to the voice acting and writing.



» [PlayStation] Psycho Mantis had a lot of neat tricks, but the controller swapping remains one of the most inventive, meta gameplay moments in gaming to this day.

» [PC] The easiest way to enjoy the game today is on Konami's recent *Metal Gear Solid Master Collection Volume 1*. Just be aware that it's not as polished as it could be.

REMAKING METAL GEAR SOLID

SNAKE SNEAKS ONTO THE GAMECUBE

■ Given the massive visual advances that the PS2 and GameCube had brought about only a couple of years after the release of *Metal Gear Solid*, it's not surprising that a remake was on the cards. Titled *Metal Gear Solid: The Twin Snakes*, it took the original game almost exactly and ported it into a more contemporary version of itself. The arrangement for the remake was handled between Konami and Nintendo, but with *MGS3* deep in development Kojima couldn't spare the time. He recommended Silicon Knights due to its work on *Eternal Darkness*. Ryuhei Kitamura handled the new cutscenes, however, with the director replacing the original's with his action-movie cinematography.

Since *MGS2* had released in 2001, a lot of the work was bringing the original game over into that engine. This meant of course improved visuals, but also gameplay elements that had come with the sequel, too. First-person shooting, guards with improved detection, hanging from ledges and hiding in lockers were all added. Even smaller details – such as being able to shoot fire extinguishers – added to the overall experience. The problem is that while these changes made sense for the sequel, *The Twin Snakes*' environments were rebuilt almost identically and didn't factor in these gameplay additions, which led to an inferior and often completely imbalanced experience. First-person aiming was particularly detrimental, allowing the player to clear entire rooms of enemies without even moving. This was further compounded in the boss fights, such as against Ocelot where it now became possible to pop off easy headshots from across the room while the gunslinger took cover. It missed a lot of what made the gameplay work so well in *Metal Gear Solid*.

Even those snazzy new cutscenes missed the mark somewhere in the transition, adding in goofier moments (like Otacon falling on his ass during serious moments of exposition) or losing the poignancy of character monologues with flat-sounding recording and less capable voice acting. On the surface, *The Twin Snakes* could've been an easy win, but sadly it lost a lot of what made the original a success in the first place.

ICONIC INVENTORY

THE MOST MEMORABLE TOOLS IN SNAKE'S ARSENAL

MK23 SOCOM

■ At this point, this silenced pistol is as much a part of Snake's identity as his bandana, and is the first weapon you can collect in the game. Players found themselves unexpectedly excited when a return to Shadow Moses in *MGS4* meant picking one of these up again.

RATION

■ The game's (and franchise's) healing item has somehow ended up becoming quite iconic, and has actually been attached to some interesting and novel gameplay mechanics. In the original *Metal Gear Solid*, for example, the ration could become frozen and would need to be thawed (equipped for a bit) before becoming edible.

BANDANA

■ Visually speaking this is an important item for Solid Snake, given it's one of the most identifiable elements of the character. However, if you don't submit to Revolver Ocelot's torture midway through the game, you'll receive the Bandana as a gift at the end of the game which can then be used on a new playthrough for infinite ammo.

CARDBOARD BOX

■ There's just something inherently funny about seeing Snake crouch sneak around an environment inside a box, and that it actually works as a tool for stealth. It's easily one of the most recognisable 'gadgets' of the series, and went on to form a number of knowing jokes and references in later games.

CIGARETTES

■ Later games (obviously) highlighted the health problems caused by smoking, but while the cigarettes might seem like an entirely useless item, they have some gameplay benefits. They'll allow you to spot laser wires, for example, and can be handy for steadying your hands when using the sniper rifle.

instead use their wits to make it through a level. It was a completely new experience for many, not least since the earlier *Metal Gear* games had passed most by. "*MGS* showed us how stealth mechanics should be done," says Francois, who especially points to the "clear rules" that are provided to the player to know exactly what is happening in the game and how to react to it. "It is a complete and consistent set of rules that set the way for any stealth game," he adds. "Remove one of its elements and the experience will be dull, frustrating or ridiculous. *MGS* was perfectly executed in that regard. No frustration – you know when you lose and don't blame the game for it."

> "IF THE SERIES HAS BEEN SO ICONIC FOR SO LONG, IT IS SIMPLY BECAUSE ALL THE GAMES WERE BRILLIANT!"
> **FRANCOIS COULON**

That's not to say there weren't moments of action, too. In fact, the pacing of *Metal Gear Solid* is something that gets overlooked, but with all those drawn-out Codec calls and quiet monitoring of patrol patterns, there was sense to add in moments of mandatory combat or set-piece battles. By 1998 the idea of a boss fight was already a long-worn concept, but even here *Metal Gear Solid* made sure to find new ways to keep these things fresh. The most obvious is the fight with Psycho Mantis, where players could swap the controller to the second port to avoid the mind-controlling capabilities of the creepy psychowarrior, but practically all of *Metal Gear Solid*'s boss battles are memorable for one reason or another. Learning that bullets won't win the day against Cyborg Ninja, a first-person sniper battle in a snowstorm with Sniper Wolf or even going mano a mano with a flipping Metal Gear REX are just some of those stellar boss battles that *Metal Gear Solid* conjured up, and they only ramped up with inventiveness and impact with each new release.

Ultimately, *Metal Gear Solid* was the game that put Kojima on the map for a generation of players, catapulting him to auteur status in a way that practically no other game director has been. Even now it feels very much like a game with a personality, with a very strict vision on what it is, what it wants to do and how it wants to do it. And while Kojima has since stepped away from the series, for more than two decades it defined his creative endeavours. "If the series has been so iconic for so long, it is simply because all the games were brilliant!" says Francois. "How many game series have been able to succeed over the years without slowly decreasing and repeating itself?"

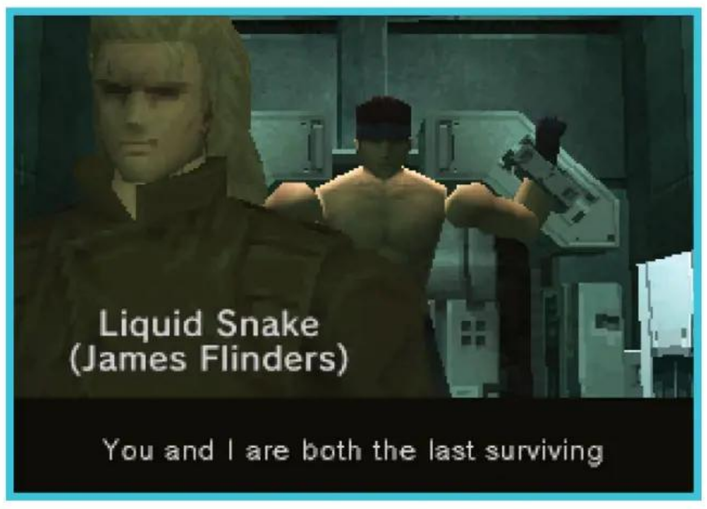
Francois points to Kojima's purity in game design, his high-level vision and a team able to execute it all to perfection as the reasons for the series' long-lasting adoration. "It is hard for me to measure the impact of Mr Kojima alone vs Kojima and his team but, to be honest, it is not important. A creative lead in this industry is someone who can convey his vision to other team members so that they can also bring something to the creative table. I don't know how Mr Kojima is managing his teams but the result speaks for itself!"

While there's a deeper story behind the details of how Konami would later go on to handle Kojima, his team and the *Metal Gear* franchise as a whole, the fact is only a handful of games have had the immediate cultural impact that *Metal Gear Solid* was able to generate. It became one of the PlayStation's most important releases, it snuck Tactical Espionage Action into a trigger-happy industry and it justified the relevance of gaming as a pastime to game developers and players desperate for videogames to become accepted as more than just toys for kids. If there was doubt, *Metal Gear Solid* proved gaming could be about so much more than squishing goomba's and blasting cyberdemons and could, in fact, compete with movies. ✱

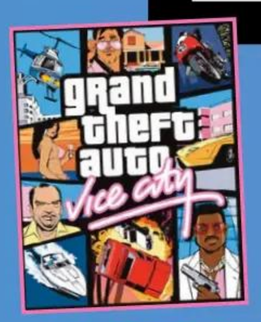
» [PlayStation] Meryl was the mandatory love interest for Snake, but she had her own detailed and refined character arc. Many games still get that wrong.

» [PlayStation] You needed thumbs of steel to survive this section of the game, but it also led to a fun fourth-wall-breaking CODEC moment afterwards.

» [PlayStation] Kojima is famed for hiding little tricks and Easter eggs, such as tricking the wolfdogs into peeing on your box so you can use it to pass through the cave safely.



THE MAKING OF grand theft auto vice city



IN THE KNOW

- **PUBLISHER:** ROCKSTAR GAMES
- **DEVELOPER:** ROCKSTAR NORTH
- **RELEASED:** 2002
- **PLATFORM:** PS2, PC, XBOX
- **GENRE:** ACTION

» [PlayStation 2] You play as Tommy Vercetti, a recently released prisoner working for the Forelli Crime Family of Liberty City.

WITH ITS EIGHTIES SOUNDTRACK, CLASSIC MOBSTER-MOVIE FEEL AND THE SANDY BEACHES AND ART DECO BUILDINGS OF ITS MIAMI-INSPIRED LOCALE, VICE CITY IS A TRUE HALL OF FAMER THAT LIVES IN THE HEART OF PRACTICALLY EVERY GAMER. RETRO GAMER EXPLORES HOW THIS ICONIC ROCKSTAR GAME WENT FROM A RESKIN TO A REVOLUTION

Words by Adam Barnes

Through the eyes of a retro lover like yourself, *Grand Theft Auto* must be such a curious franchise. For those truly devoted retroists, the original pair of PlayStation games that started life as *Race 'N' Chase* feel a world away from the massive blockbusters that dominate the gaming industry for a few months each time a new one is released.

Gone is the gouranga and the dedicated fart button and in its place are narrative-driven crime operas with complicated characters, high-stakes missions and cover-based shooting. You could argue that *Grand Theft Auto III* was the turning point, given the fact that the runaway success of this technical showcase of what the PS2 could do for gaming essentially caused an entire industry to pivot. But ask anyone what their favourite PS2 *GTA* game is and you perhaps won't get *GTA III* as the answer. *Vice City*, with its unique mix of aesthetics, audio and cinematic feel to the story built on top of the technical achievement of its forebear, and in many cases it's the one that gamers around the world will remember the most fondly. But interestingly, *Vice City* wasn't even planned as a full-blown release at all.

At some point in 2000, the original Dundee office of Rockstar closed, and with it the teams merged into the Edinburgh studio to form Rockstar North. Essentially this was two teams, one that had made *Body Harvest* for the Nintendo 64 and another that had created *Space Station: Silicon Valley*. "There was no direction from anyone," says Obbe Vermeij, who was the technical director on all the *Grand Theft Auto* games from *GTA III* right through to the final *GTA IV* expansion pack. "So we started doing our own little prototypes. I worked on a fun little racing game with spheres, and there was a team of a couple of guys that worked on a *Godzilla* game. Basically, there was no direction. And at some point, Leslie Benzies and Aaron Garbutt decided, 'Well, you know, maybe we'll start working on *GTA III*, because we sort of have that licence.'"

What ensued was two-and-a-half years of intense development and hard work to ship a game that would go on, not only to be a new technical barometer of what could be done with 3D worlds in gaming, but was a massive success for the company having sold 6 million copies in its first year and grew to over 15 million in its lifetime. It thrust the newly coined Rockstar North (having ditched the

DEVELOPER HIGHLIGHTS

LEMMINGS
SYSTEM: AMIGA, VARIOUS
YEAR: 1991

GRAND THEFT AUTO III
SYSTEM: PS2, XBOX, PC
YEAR: 2001

GRAND THEFT AUTO V (PICTURED
SYSTEM: PC, VARIOUS
YEAR: 2013

» [PlayStation 2] The Ocean Drive Hotel is super iconic, and that lush neon lighting really sets the tone for the game as a whole.

» [PlayStation 2] Even though mechanically *Vice City* is largely unchanged, a palette swap, some tweaks to the UI and a sunnier weather cycle make the city feel much more different to *GTA III*.

» [PlayStation 2] Missions can range from serious and tough, to lighthearted and silly – something that more recent *GTA* games are somewhat lacking.

» [PlayStation 2] Taking to the waves was a thrill at the time, though in truth *Vice City* handled it a little awkwardly with limited mission options and finicky disembarking.

» Obbe Vermeij was a technical director at Rockstar North (and earlier DMA Design) as it grew into the behemoth developer it is today. He's not been working in games since he left Rockstar in 2009, though he tells us he's been motivated by the idea of getting back into it.

DMA Design moniker) into a household name, not only for the popularity of the game but also for the headlines of hate that shone a spotlight on the violent, killing-spree-infused PS2 shooter. "Obviously it did really well," says Obbe, "sort of better than we expected. So at that point, Rockstar New York asked us to do what was going to be essentially an add-on to *GTA III*, like a mission pack basically."

Initially the idea wasn't going to be a completely new game at all, but rather a quick turnaround of extra missions and weapons to capitalise on the sudden wave of success that the then comparatively unknown Rockstar Games was just starting to ride. The plan for the add-on was for a year of development, but as the team worked on it, the game became much bigger, big enough to be a standalone product. "That year on *Vice* was kind of crazy," recalls Obbe, "particularly for the programmers, because we also had the PC version of *GTA III*. Rockstar wasn't famous like it is now, that was like the first game that made it big." A lot of the work had already been done thanks to the existing engine used for *GTA III*, so the artists started shortly after the end of development on *GTA III* with the programmers coming in later and having only six months to wrap up everything.

> "THE LEVEL DESIGNERS WOULD DO EXPERIMENTS AND CODE MISSIONS"
> — obbe vermeij

A large part of what it is that many love about *Vice City*, and arguably the thing that truly makes it iconic, is its unique setting. Games set in the Eighties even to this day aren't especially common, but the Miami-in-the-Eighties setting was just a perfect lay-up for the amalgamation of classic gangster movies that broadly tied the story together. "Well, that was the only thing that was sort of decided firmly at the start," says Obbe. "That sort of came from New York. They sort of said, 'OK, well we think Miami in the Eighties would be a good setting.' So the rest of it was quite kind of organic at the time. The level designers would go and do experiments and they would maybe code like little missions to see if it was fun." Obbe adds that aside from that there wasn't actually that much that was designed from day one of development, and highlighted the more organic approach to development of the game than was the case in *GTA III*. "I

KILLER TRA

THE SOUNDS OF THE EIGHTIES

MICHAEL JACKSON
BILLIE JEAN

STATION
FLASH FM

This is the first song you'll hear after climbing into the car in the intro mission. It's the perfect choice for kick-starting the distinctive Eighties vibe that *Vice City* has.

A FLOCK OF SEAGULLS
I RAN (SO FAR AWAY)

STATION
WAVE 103

No song on the soundtrack epitomises the sound of the Eighties like this synthesised banger. It was actually used in some of the marketing for the game, too.

THE WHISPERS
AND THE BEAT GOES ON

STATION
FEVER 105

Just pop this song on the nearest speakers you find and we challenge you to *not* dance in your seat as you recall the neon streets of Vice City.

THE BUGGLES
VIDEO KILLED THE RADIO STAR

STATION
FLASH FM

Arguments with friends about whether Flash FM or Wave 103 were the best station were always won simply by the existence of this song on Flash.

NENA
99 LUFTBALLONS

STATION
WAVE 103

Admit it, you still listen to the German version of this because of *Vice City*. It's OK, we do too. [It also makes me think of one of JD's dream sequences from *Scrubs* – Ed]

HERBIE HANCOCK
ROCKIT

STATION
WILDSTYLE PIRATE RADIO

Hip-hop station Wildstyle was perfect for offering an alternate view of Eighties music, but when that keyboard synth kicks in it gets in your head and refuses to leave.

INDEEP
LAST NIGHT A DJ SAVED MY LIFE

STATION
FEVER 105

There's a lot of great disco songs on Fever 105 and the smooth voice of its presenter makes it all the better, but the best track on there is this one by far.

LOVE FIST
FIST FURY

STATION
V-ROCK

This fictional Scottish band didn't just appear on the radio, but there are a string of missions dedicated to their rock and roll lifestyle – so this song pops up often in the game.

ANEKA
JAPANESE BOY

STATION
WAVE 103

This is one of those Eighties songs that didn't really survive into contemporary playlists, meaning for most of us *Vice City* will be the only place it was ever encountered.

GRANDMASTER FLASH & THE FURIOUS FIVE
THE MESSAGE

STATION
WILDSTYLE PIRATE RADIO

You can't have an Eighties hip-hop-style and not include the Grandmaster Flash in there. And what an iconic track of his Rockstar chose.

KIM WILDE
KIDS IN AMERICA

STATION
WAVE 103

This quintessential Eighties pop song cannot be beaten, and it's the perfect song to soundtrack a race through downtown Vice City.

WANG CHUNG
DANCE HALL DAYS

STATION
FLASH FM

As one of the songs that you'll hear each time you enter the Malibu Club, this is perhaps one of the most iconic songs in the whole game.

HASHIM
AL-NAAFIYSH (THE SOUL)

STATION
WILDSTYLE

Synthetic drums and a Casio keyboard that build a dark dance track that would only really fit in a sweaty Miami club in the Eighties. What's not to love?

CUTTING CREW
(I JUST) DIED IN YOUR ARMS TONIGHT

STATION
EMOTION 98.3

If there's an Eighties song that makes you pump your arm back in celebratory passion, then it's almost certainly one you heard on repeat in *Vice City*.

QUIET RIOT
CUM ON FEEL THE NOISE

STATION
V-ROCK

This is one of those songs that if you're flicking through the radio stations in your car on Ocean Drive, you're going to stop searching for something to listen to.

TRACKS

TWISTED SISTERS
I WANNA ROCK

STATION
V-ROCK

If you ever attempted those dirt bike stunt challenges in the arena on the second island, this will have been the soundtrack to your repeated failure.

FOREIGNER
WAITING FOR A GIRL LIKE YOU

STATION
EMOTION 98.3

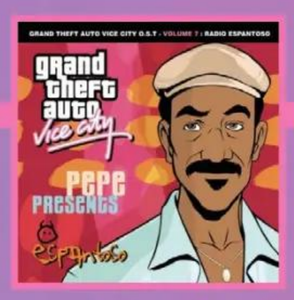
Fernando Martinez and his emotional radio station might not have the bouncing Eighties pop of the other stations, but this intro track definitely hits in the heart of nostalgia.

HALL & OATES
OUT OF TOUCH

STATION
FLASH FM

There's a very brief quiet pause when the radio stations loop over, so this as a starting track for Flash FM was a powerful move by whoever the soundtrack guy was at Rockstar.

UNAESTA
LA VIDA ES UNA LENTEJA



STATION
RADIO ESPANTOSO

While the Latin station might not have been the most popular one, this song will be memorable for it playing practically on loop in the Ocean Drive Hotel, your first starting safe house.

YES
OWNER OF A LONELY HEART

STATION
FLASH FM

Honestly, w've been listening to *Vice City*'s radio stations for hours now trying to narrow down the songs for this boxout… the point is, *Vice City*'s soundtrack is unbeatable.

» [PlayStation 2] Way more than its predecessor, the cast of characters in *Vice City* aren't only interesting people, but they're nuanced, distinct and tie the whole story together.

» [PlayStation 2] With *Vice City*, it felt like a lot of the learnings of *GTA III* had led to a much stronger sense of what was fun and what wasn't. And also what worked narratively.

I remember halfway through development, one of the level designers came up with the idea to have these locations that you could buy, so you can buy the club and you could buy the movie studio and things like that. And I thought that was a great idea because back in *GTA III*, it was just like you worked your way through the story, but it never felt like you owned the city. Whereas in *Vice City*, you would have enough money and then you would buy the club, and then you'd get missions from there."

This became one of the major gameplay changes for *Vice City*, with the game's story unfolding more naturally through the player's decision to purchase businesses throughout the city and interacting with those hired to work in those locations, rather than having a mute protagonist numbly trot along from mobster to mobster. "Actually, anyone in the company could have an idea and suggest it," says Obbe. "And then the good missions would just survive. Then the script writers, which was half in New York and half with us, they would then find a way to fit that mission into the story. Whereas in the later games, it was more the other way around where the story was written first, and then the missions were sort of fitted into the story."

> "ACTUALLY, ANYONE IN THE COMPANY COULD HAVE AN IDEA AND SUGGEST IT"
> — OBBE VERMEIJ

Naturally it stands to reason that a design process this "chaotic" (Obbe's choice of word) and a deadline this tight called for a very strict system of tracking and planning, something high-tech that would be able to match the ever-shifting mix of missions, characters and locations. "So, the producer, Leslie Bensies, would have these Post-It notes," says Obbe. "I can't remember his system, but like, yellow Post-It notes would be characters and green ones would be missions and pink ones would be locations or whatever. And then he had a wall in the design room, and he would constantly be moving them around like, 'OK, so that mission, that has to go a little bit further down. So then we'll stick it to this contact point and then, oh yeah, this, this can move to that location.' He was still moving things around quite late on." Luckily the team didn't have to worry too much about that tight deadline, since a large portion of the game – at least from a code perspective – was already made. The engine that powered *GTA III* was of course bundled with a few additional extras, but everything worked the same way just with a neon-infused aesthetic. "There's a lot of systems that got tweaked under the hood," recalls Obbe, "like the streaming was always a problem. Adam Fowler, the other technical director, was constantly tweaking that and trying to improve it. But yeah, from a technology point of view, there weren't that many changes." Since the programmers in particular only had six months allocated to working on *Vice City*, there was "just not enough time to do things". That didn't mean there weren't new additions, however, boats were now drivable, planes had some missions dedicated to them and of course a bunch of new or reskinned weapons. "I would say it's like 90% *GTA III* code, 10% is some add-ons really," suggests Obbe.

It wasn't just the underlying engine work that set the foundation for *Vice City*,

» [PlayStation 2] The use of a lot of visual FX, such as a golden hour sunset, added some charm and flair to the experience of being in Vice City.

the story starts here

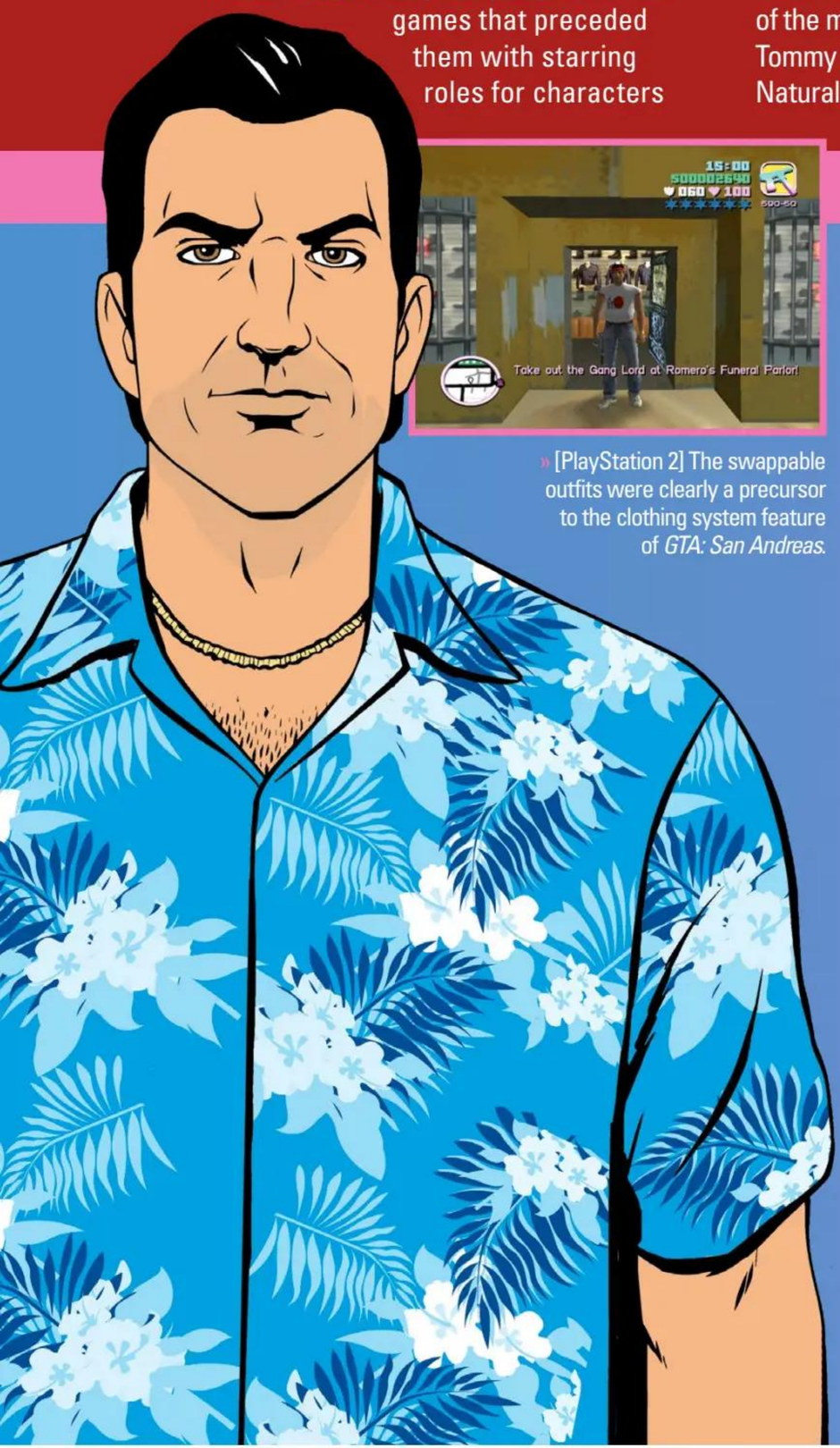
THE FIRST DANCE FOR LANCE VANCE

Back when Sony was making a push for success on its first handheld, it was looking to garner all sorts of high-profile games for the PlayStation Portable in the hopes that it could lock in some early owners of the device and dethrone Nintendo's DS. That's where the *Stories* series of *GTA* games came in, cause if *Grand Theft Auto* can't push hardware units then nothing can…

First it was *Liberty City Stories* in 2005, and then *Vice City Stories* in 2007. In both cases, they are prequels to the games that preceded them with starring roles for characters in the original games that didn't get much screen time otherwise. In *Vice City Stories*, that character was Victor (AKA Vic) Vance, the older brother of Lance Vance whom we're sure we all know intimately from *Vice City*. Rockstar retroactively confirmed that the Vance brother killed in the opening sequence of *Vice City* was indeed Vic, while the prequel will have you play his rise to power in the city alongside his brother.

It's a fun spin on the prequel concept, which might've otherwise featured some of the more prominent characters that Tommy Versetti meets in the original game. Naturally Ricardo Diaz is a prominent figure throughout and Vic does work with him quite a bit. *Stories* is particularly fun for fans of the original, since many parts of *Vice City* in 1984 – two years prior to the events of the original – are different, such as how Diaz has invested in a mansion on Starfish Island which is not yet built.

The games themselves were solid *GTA* experiences, and *Vice City Stories* really pushed on the empire takeover feeling of the original to turn it into a core gameplay feature for the game. While it was solid as a PSP exclusive, both *Liberty City Stories* and *Vice City Stories* turned up on PS2 a year after the release of their handheld versions.



» [PlayStation 2] The swappable outfits were clearly a precursor to the clothing system feature of *GTA: San Andreas*.

fun in the city

I FOUGHT THE LAW, AND THE LAW LOST

GET YOUR FISTS OUT

If you're really looking to stick it to the man, there's perhaps nothing quite so relieving as grabbing a baseball bat or a hammer and just unloading on the first copper you see. Actually a fist fight won't get you into too much trouble, but it's surprisingly easy to slip up and end up getting busted.

THIS IS A STICK UP

Vice City added in a few locations throughout the city where the player can go in, point their gun at the cashier and have them hand over money to you. Stick at it for long enough and you'll get a decent number of stars after you and a nice bit of cash in your ever-fattening wallet.

> "THAT YEAR WAS PROBABLY THE MOST STRESSFUL YEAR THAT I HAD AT ROCKSTAR"
> — obbe vermeij

though. Having worked on the earlier *GTA III* for two-and-a-half years meant that, naturally, there were a good number of learnings from that game that were automatic design choices in creating the sequel. "So for instance, when we started *GTA III*, there was a really big road going through the first island," recalls Obbe, "and we had to change it because the player could go too fast and then by the time it got to the end of the road, the models weren't loaded in. It was terrible. So we actually changed the layout of the city." This was helpful when designing the layout of *Vice City*, since Rockstar knew the various technical limitations that the engine already had. "You could have a big coastal road because then you didn't have to load the models where the sea was, so there would be less streaming issues," explains Obbe. It helped that, at least in terms of the engine anyway, that *Vice City* wasn't as vast a technical step up as *GTA III* had been for *GTA 2*, so the programming time could be better split across refining the code as much as adding in new content and features. "With *GTA III*, we just didn't have that much time." says Obbe. "We just threw everything together and said, 'Yeah, this is gonna have to be it.'"

It's not a surprise given the short turnaround that *Vice City* was not such a dramatic shift, but the changes that were there were critical to pushing it out from the shadow of the technical achievement that was *GTA III* and out into its own success. A large part of that was the story and the setting which, more than earlier games, the player could actually feel a part of. "Looking back, *GTA III* was a good game and everything, but it didn't have any sort of personality," admits Obbe. "I think that's because *GTA III* was made up of more technical people, artists and just more gameplay people, whereas the people in New York are more concerned with style and story." So when Ray Liotta got on board to voice player character Tommy Vercetti, the quality of the story could stand out quite a bit more. Then with the likes of Danny Dyer, Burt Reynolds and Jenna Jameson and many others all on board for various roles in the game, it became a more serious effort than *GTA III*'s narrative.

This all came from the New York studio, which was managed by the Houser brothers, who were the guiding vision behind the story and the vibes that would ultimately go on to transcend *Vice City* into the hall of fame. "I do remember it being an awful lot of fun when I started working on it, because just changing a few little things completely changed the vibe of the game," says Obbe. "I did the code for the weather, so *GTA* games cycle through weather and it's just a list, so it's sunny, cloudy, cloudy, rain, foggy, foggy, whatever. It was just one table of numbers and in *Vice City* I changed it purposely, cause in Miami it's just sunny, sunny, sunny. And it completely changed the vibe of the game. It was just, you know, five minutes of work." Obbe recalls how these things just kept happening, adding moments such as when the artists added neon UI elements and pick-up FX, or when another programmer changed the water from *GTA III*'s opaque brown to more transparent with waves in *Vice*. "That had a huge visual impact. It was remarkable how just a few non-technical things made the game just go from grey, boring, *GTA III* to sort of sunny, happy *Vice*."

It had an effect on the final product, too, since while many remember *GTA III* for its technical prowess, they don't remember quite as much about the game itself aside from the joy of living within a gritty New York-esque cityscape. *Vice City* wasn't really an overhaul, but a refining of what came before it, and it was all the stronger for it. Even with just a year of development, *Vice City* managed to stand on the shoulders of its predecessor and achieve something far bigger, better and more stylish. "I remember that *GTA III* was kind of hard work, but it wasn't crazy," says Obbe. "Everybody still went home at seven, nobody worked over the weekends. But *Vice City* was kind of crazy, because we knew we had a one-year deadline and there were more expectations and there were so many things we wanted to do. That year was probably the most stressful year that I had at Rockstar."

Despite the intense work that the team faced, Obbe still looks back on the project with a great deal of fondness. "It was really a joy to see the game come together because while I love *GTA III* and essentially it was the same game, with *Vice City* we were able to do the style and that made it completely different. It's probably my favourite game from the games that I worked on." ✱

» [PlayStation 2] It was still possible to take on some side work, such as taxi driver, paramedic, firefighter or even just pizza delivery.

YOU ARE THE LAW

The Vigilante missions might be an opportunity for Vercetti to turn some of his criminal karma around, but you are still murdering people wilfully as you track down and 'reprimand' other criminals. At first you won't notice an impact, but at later levels you'll need to defend yourself from the cops *while* also being a cop yourself.

ON A RAMPAGE

Replacing the original PS1 games' Kill Frenzy, the Rampage missions are hidden throughout the world and task you with a large body count under strict rules. They're definitely going to attract a large number of police to you, but make sure you succeed, otherwise you won't reset your wanted level.

STORM THE ARMY BASE

Located (almost hidden away) at the back of the second island is Fort Baxter, an army base replete with army trucks, helicopters and even a tank. This is all well and good, but even just entering the base will give you the maximum wanted level and plenty of soldiers with assault rifles. Plan this one.

THE MAKING OF

CALL OF D

THE STORY OF CALL OF DUTY BEGINS NOT AT ACTIVISION, BUT IN THE BOSOM OF ITS CHIEF RIVAL, EA. THE LATTER PUBLISHER HAD TASKED A DEVELOPER NAMED 2015 INC WITH EXPANDING ITS TERRITORY ONTO PC WITH MEDAL OF HONOR: ALLIED ASSAULT

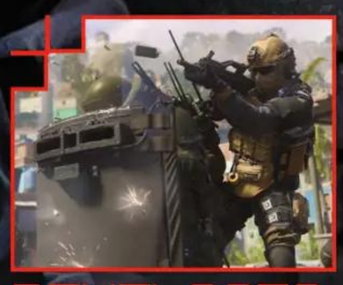
WORDS BY JEREMY PEEL

» [PC] *Call Of Duty* boasts an impressive array of weaponry across its three campaigns, and you'll need to master all of them.

UTY

IN THE KNOW

- **PUBLISHER:** ACTIVISION
- **DEVELOPER:** INFINITY WARD
- **RELEASED:** 2003
- **PLATFORM:** PC, MAC
- **GENRE:** FIRST-PERSON SHOOTER



DEVELOPER HIGHLIGHTS

CALL OF DUTY 2
SYSTEM: VARIOUS
YEAR: 2005

CALL OF DUTY: WARZONE
SYSTEM: PLAYSTATION 4, PC, XBOX ONE
YEAR: 2020

CALL OF DUTY: MODERN WARFARE III (PICTURED)
SYSTEM: PC, VARIOUS
YEAR: 2023

> "UP UNTIL THAT POINT, A LOT OF GAMES WERE HYPER-COLOURED AND BRIGHT AND SHINY, AND THIS WAS NOT"
> **BRAD ALLEN**

"Steven Spielberg started *Medal Of Honor,*" says artist Brad Allen. "He sent us a video one time, commending certain things that he was liking in the game as we were progressing. It was super neat to get to work on a Spielberg project."

Brad's role at 2015 Inc was his first games industry job. In fact, although the studio had secured a modicum of credibility in first-person shooter circles with its *SiN* expansion, *Wages Of Sin*, it was mostly populated by young and inexperienced developers – nearly all of whom had travelled to Tulsa, Oklahoma from elsewhere in America to seize their breakthrough opportunity. "I had moved out there from California, so it was a bit of a culture shock," Brad says. "But it was really fun."

Robert Field, a modder who had built the enemy AI for *Quake*'s popular Frogbot, was even further from home. He arrived at Tulsa International Airport on 15 December 2000, when development on *Allied Assault* was already underway. "I'm from Brisbane in Australia, so walking around in the snow in Tulsa was interesting," he says. "We even had a tornado once."

The weather was tolerable because the work was fulfilling. With the Nineties over, *Medal Of Honor: Allied Assault* looked like the future. "To me, up until that point, a lot of games were hyper-coloured and bright and shiny, and this was not," Brad says. "This was subdued and realistic looking, and all the colours were drab. It was much more rich and interesting, the way they were presenting it."

The foundations for *Call Of Duty* were set here, in the shadow of Spielberg. In place of the machismo of *Doom* and *Duke Nukem* was a more subtle sense of historic pride, mingled with sadness and a sense of sacrifice. Your avatar wasn't a superman, but a vulnerable soldier victimised by World War II, attempting to carry out hair-raising orders as best they could. This was an interactive *Saving Private Ryan* or *Band Of Brothers*. Or at least, it would be, if 2015 Inc's rabble could all push in the right direction.

"When I arrived, the animation system and everything was broken because they were replacing everything," Robert says. "I didn't know much about it because I was a mod author, so I thought, 'Oh, this is what you do.' Later on, Jason West brought the discipline where you always have a working game and you're able to show prototypes." Jason West had joined the team as a programmer to

» [PC] The campaigns were punctuated by a number of frantic and tightly-scripted chase sequences.

» [PC] Sometimes you stuck closely to a single squad of soldiers for multiple missions.

» [PC] Your objective was often to locate and sabotage enemy equipment, like heavy artillery.

work on a console port. "But then I think Vince Zampella convinced him to take over," Robert says. "He became pretty much the lead of *Allied Assault*. We were a bunch of mod authors and he came on and got us meeting the schedule."

Brad, who was creating the game's characters, would grab photos of members of the team and transform them into German or American soldiers, telling them, "You're gonna be the bad guy."

"Everybody that I was working with was super talented, and super enthusiastic about what we were making," he says. "Everybody wanted to put the special sauce on it and spend the extra hours. It was really a fun experience, minus a few other things."

Some on the *Allied Assault* team had concluded that they didn't want to stay at 2015 Inc beyond the end of the project. "We weren't going to get a good deal with the owner of 2015," Robert says. "Jason, Vince and Grant [Collier] wanted a better deal where we got royalty sharing."

Resolving to set up a new company, a handful of key staff started to make moves. "We were all over the place, with five or six guys sneaking off to lunches and going, 'What are we going to do?,'" Brad says. "We had no idea what the name of the company was going to be. We just started spitballing ideas for games. One of our ex-producers had connections with different publishers, and he was like, 'What if we got this IP or that IP?' So it was really exciting. There were a ton of different ideas floating around and options that we could have done."

Yet the first thing the new Infinity Ward worked on was, in fact, *Medal Of Honor*. More precisely, an add-on pack for *Allied Assault* at the behest of EA. "We were still working on the same game, with the same publisher, but as another company," Brad says.

Many packed up and vacated the 2015 Inc office overnight. Although, as Brad remembers, Robert didn't get the memo straight away, "Robert was away on vacation or out of the country or something. So we didn't have a way to let him know. He shows up the next day, and everybody's gone. I think Grant contacted him and let him know, 'Hey, we're here, this is what's going on'. He may have been a little bewildered."

> "WE WERE ABOUT TO GO UNDER AND GET ABSORBED INTO THE EA COLLECTIVE. AND ACTIVISION SWOOPED IN"
> **BRAD ALLEN**

The change and bewilderment didn't end there. When Infinity Ward was deep into development on its *Medal Of Honor* expansion, EA stopped paying for the work. "We were about to go under and get absorbed into the EA collective," Brad says. "And Activision swooped in. They were like, 'Hey, we'll fund your next project. If you work for us, you can stay together as a team.' And that was a really big issue for us, because we really liked working with each other."

"It's a family type of thing," Robert says. "We felt we had a good team, and we had Jason, who was pretty much the team leader, so we all rallied behind him."

Activision wanted Infinity Ward to make a competitor to *Medal Of Honor* – an idea which didn't enthuse the entire team, who had already spent years with their heads in a simulated Second World War. But it was the best offer they had, and so they agreed – initiating a partnership that has now lasted for two decades and counting. "The goal was having a good solid team of people to work with that we liked," Brad says. "We trusted each other's instincts and talents [at Infinity Ward], and it was a great opportunity to continue working with nearly everybody."

Twenty-two people had worked on *Medal Of Honor: Allied Assault*. "And when *Call Of Duty* started, we all moved six miles down the road in Tulsa," Robert says. The team occupied the 37th floor of the 60-story CityPlex tower. The iconic local building was first built by controversial televangelist Oral Roberts at the request of, as he told it, a 900-foot vision of Jesus. "Thirty-seven flights of stairs is not fun for fire alarms," Robert says. "After the first alarm I said, 'I'm not trashing my knees anymore. If it burns down, it burns down.'"

Infinity Ward was led by Ward, Zampella and Courier. "To fund *Call Of Duty*, Grant was maxing out his credit card originally," Robert says. "He was important from a biz point of view. And he got paid out well in the end."

Ward was the creative force, however – steering the team through a tight 18 months of development. "Starting from *Call Of Duty*,

COD IN BRIEF

THE TEN DEFINING ENTRIES TO THE SERIES

CALL OF DUTY

■ The original PC hit imbued *Medal Of Honor*'s formula with a new sense of shock and awe. Iron sights brought the action in close, and muzzle flare made it frightening for the first time. A rare FPS that balanced power with vulnerability.

CALL OF DUTY: WORLD AT WAR

■ Where Infinity Ward had established a sombre tone of Spielberg-esque respect for those who fought in World War II, Treyarch embraced horror motifs, expanding the tonal palette of *Call Of Duty* for better or worse.

CALL OF DUTY 4: MODERN WARFARE

■ An adventure in embodying impossible perspectives, this most zeitgeist-y of *COD*s let you attend your own execution at gunpoint, and dropped a nuclear bomb on your head. In 2007, it was all anyone could talk about.

CALL OF DUTY: BLACK OPS

■ Treyarch finally stepped out of the shadow of Infinity Ward with an audacious paranoid thriller which, like *Forrest Gump*, seemed to take in every major political event in American history from the 1960s onward. Mean-spirited yet memorable.

CALL OF DUTY: MODERN WARFARE 2

■ Infinity Ward jumped the shark here. The follow-up to a behind-the-headlines SAS story, this was a bombastic interactive *Bond* movie, which courted controversy with an infamous level about shooting up an airport packed with civilians.

CALL OF DUTY: MODERN WARFARE 3

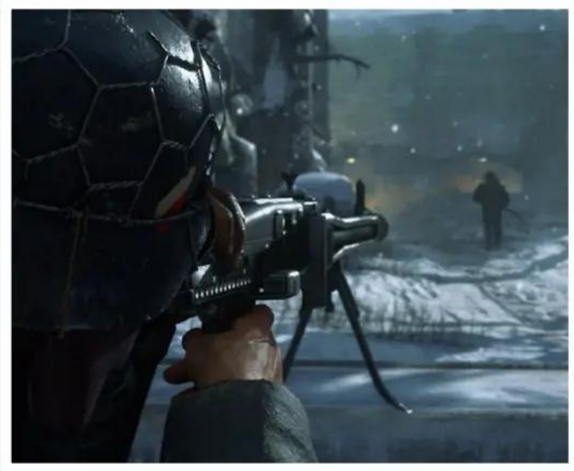
■ Sledgehammer managed to pull together a respectable, if over-egged, campaign – hiding the fact that Infinity Ward was falling apart, and its key staff fleeing to EA to set up Respawn. The latter move would lead to *Titanfall* and *Apex Legends*.

CALL OF DUTY: INFINITE WARFARE

■ *COD*'s best told story, *Infinite Warfare* features a surprisingly grounded science-fiction tale of human colonists on Mars, returning to Earth to wrest it from the weak and complacent. It was roundly rejected by fans who wanted more traditional fare.

CALL OF DUTY: WWII

■ Representing a retreat for the series, Sledgehammer's entry returned to the setting in which *Call Of Duty* first made its name. Yet its campaign offered excellent first-person cinema, and its multiplayer featured brave experiments in huge, dynamic battles.



CALL OF DUTY: MODERN WARFARE (2019)

■ Infinity Ward entered its remix era with this self-referential visit to the events of 2007. Both its campaign and its multiplayer succeeded by embracing intimacy – going smaller to increase the tension, without reducing the stakes.

CALL OF DUTY: WARZONE

■ *PUBG* invented the battle royale, and *Fortnite* took it mainstream. But *Warzone* struck the balance, retaining the hardcore multiplayer stealth appeal of Brendan Greene's original while tuning its skirmishes towards speed and approachability. A true phenomenon.

CAMPAIGN TRAIL

INSIDE THE THREE STORIES COD TOLD

AMERICAN

Private Martin lands in France as a paratrooper in June 1944. With his unit scattered, he joins a ragtag impromptu fighting force to take out anti-aircraft positions ahead of D-Day, the events of which were covered in *Medal Of Honor: Allied Assault*. After that success, he's assigned to rescue two British officers, Captain Price and Major Ingram, from a Bavarian manor.

BRITISH

Captain Price leads a unit, including the player character Sergeant Jack Evans, to clear Pegasus Bridge in Bénouville of Wehrmacht soldiers. Before long, Evans is transferred to the SAS, with whom he sabotages the Eder Dam. Evans and Price then pose as Kriegsmarine sailors to infiltrate the battleship Tirpitz and disable its defences. In many ways, this is an early prototype for *Modern Warfare*'s campaign.

RUSSIAN

Call Of Duty on hard mode, the Russian campaign begins as a gruelling yet thrilling battle to kick the Nazis out of Stalingrad. Corporal Alexei Ivanovich Voronin is witness to Soviet officers killing their own retreating soldiers, and isn't always equipped with a weapon himself. By January 1945, though, Voronin is promoted and leads his old unit to raise the victory banner atop the roof of the Reichstag in Berlin.

» [PC] Muzzle flare helped deliver on the sense of danger, and gave away enemy positions.

Jason had a whole system of how we do features," Robert says. "At the beginning, all the level designers would write on cards the things they wanted in the game. Then the programmers would estimate how long that would take and look at our schedule and say, 'OK, this is how many things we think we can do.' We'd prioritise them and go down the list. We were scarred pretty badly from *Allied Assault*, where it got delayed."

The team put together a detailed design doc – something they wouldn't bother with on later projects. "I guess we were trying to impress Activision," Robert says. "And Jason wanted to make sure we were on track."

The addition of multiplayer was a compromise, made to please the publisher – a surprise, given how important the online component would later become to the series. "There was this notion back then of back-of-the-box features, and Activision was focussed on the buzzwords," Robert says. "We said, 'OK, we'll add multiplayer.' By *Modern Warfare*, half the development was on multiplayer. Earlier on, it was just minimal."

Infinity Ward's primary focus was the campaign, an ambitious single-player mode that would see the player fight on different fronts of the war as three separate soldiers – one Russian, one British, one American. "Probably at one point it was more than three," Brad says. "But we had to narrow it down for scope reasons, and have it all be able to fit on a CD."

> "WE WERE PUT OFF BY THE IDEA OF HAVING JUST THE ONE HERO CHARACTER THAT SAVES EVERYBODY IN THE WAR"
> **BRAD ALLEN**

The decision to back multiple protagonists would have huge implications for *COD*'s future of perspective-swapping stories. "I think we were put off by the idea of having just the one hero character that saves everybody in the war," Brad says. "It didn't feel as realistic. We wanted to represent everybody that contributed to that part of history."

Like *Medal Of Honor: Allied Assault*, *Call Of Duty* was to be T-rated in the United States – suitable for ages 13 and up, with violence but little blood. Nonetheless, Infinity Ward wanted to ramp up the grittiness and intensity. "We had aiming down the sight and going prone, those sorts of things that were more tactical," Brad says. "A lot of the guys were playing *Counter-Strike* and they liked all those aspects of the shooting and the realism."

Players of the first *Call Of Duty* demo were in awe when, during a nighttime assault on the French village of Sainte-Mère-Église, the impact of a nearby mortar shell would flatten their character prone, the impact ringing in their ears.

"There was a lot of cool attention to detail that was put into that," Brad says. "We wanted it to feel like the player was the person, and the immersion was the thing. And it didn't have to be a name that went with a character that you were playing. It was really the idea of getting a feel for what it would be like to be in that situation."

Brad was one of five artists on a team that ultimately totalled 26. "And a lot of people wore a lot of different hats," he says. "That was a good aspect of a small company. You're able to play with whatever you can." During one memorable mission, the player crosses the Volga river into Stalingrad with a group of Red Army conscripts – and watches in horror as a boat of friendlies is struck by German artillery. Brad got to animate the ship as it sank into the depths.

"I had our lead animator holding my hand and going, 'Try this, we're going to make this a little more extreme,'" he says. "It was a learning experience. Everybody was free to contribute." And if an idea didn't work out, nobody got into trouble. "That added to the game being as good as it was, because everybody was heard and everybody got excited about throwing out an idea," Brad says. "Maybe it would stick, or somebody might be able to help make it better."

» [PC] The mobile shoot-out is a format *Call Of Duty* still deals in to this day.

The Stalingrad level was heavily influenced by *Enemy At The Gates*, the 2001 Jude Law movie that follows two rival snipers over a long winter of battle. In one harrowing moment, the player is handed ammo rather than a gun – and commanded to pick up the rifle of a fellow soldier once he is killed. It's a scene pulled directly from the film.

» [PC] A dam infiltration saw *COD* lean into espionage, though it featured no true stealth mechanics.

"Level designer Steve Fukuda had *Saving Private Ryan* running on another screen continually during the whole game, pretty much," Robert says. "Actually, there was talk that Activision wanted to make a *Band Of Brothers* series. But then they'd have to pay licensing. I don't think it would've been the best decision."

The team was hungry for any new piece of cinema that featured the Second World War. "That helped us with setting things apart visually," Brad says. "Luckily there was a nice wealth of really strong cinematography. Having that goal of making things feel cinematic and real and heavy led the way for the look of the three campaigns."

Research tools were worth their weight in gold. "Whatever books we could find," Brad says. "Whatever things we could find on the internet. For the second *COD*, we sent a bunch of guys to different places for photo reference. But for the first one it was all about Google."

Infinity Ward bought model kits, and visited tank and aircraft museums on photo safaris. "When you didn't have a whole lot of access, you worked with what was close by, and luckily in Southern California there's a plethora of places that have all these artefacts and equipment from back in the day," Brad says. "Even if it's not in the best condition, all of that wear and tear adds to the flavour. You don't want everything to look perfect, even though probably at the time it was brand-new. If you throw a little dirt and rust on it in the game, it just looks cool." Legendary military consultant Dale Dye returned, having worked with the team on *Medal Of Honor*. But the artists most valued their time with re-enactors, who would allow their gear to be photographed, "We were always trying to be as accurate as we could."

» [PC] Infinity Ward set up a poignant contrast between quaint French countryside and brutal battle.

> "THERE WAS TALK THAT ACTIVISION WANTED TO MAKE A BAND OF BROTHERS SERIES. BUT THEN THEY'D HAVE TO PAY LICENSING"
> **ROBERT FIELD**

***Call Of Duty* sold the idea that, rather than a catchphrase-ready commando, you were just one face in a crowd of desperate fighters.** Robert worked on the AI, ensuring that each soldier could navigate the rubble and get to their intended destination, "If you've ever seen an AI clip through a wall in *Call Of Duty*, that's using the fail-safe that Jason said we definitely had to have," he says. "He said, 'No matter what, they have to get from point A to point B.' If the AI doesn't get there, the level's broken, it's not going to continue. If they were really getting in trouble, getting caught on something, I would just noclip them wherever they're trying to go."

In some of the larger battles, Infinity Ward compromised on the intelligence of its troops, by having the more distant soldiers follow animated paths rather than using their heads. "When you get off the boat in Stalingrad and all the guys are running up, they're actually not AI," Robert says.

Among the hundreds of soldiers who passed through *Call Of Duty*'s campaign, one moustachioed individual stood out: Captain Price. "It's pretty crazy," Brad says. "He made it all the way to *Modern Warfare*. He's one of the key guys now, he was the guy that stuck. Everybody was meant to be, not throwaway, but they weren't supposed to be the heroes. Everybody was supposed to be a hero, so nobody was supposed to be the main badass."

The "big crazy struggle" of the project came in the summer of 2003, the year *Call Of Duty* was to ship. That's when all of Infinity Ward upped sticks and moved from Oklahoma to California – into the LA building they would occupy until *Modern Warfare 3*. "We were more than just coworkers," Robert says. "And the fact that we all came from Tulsa, it's like this journey you're on."

"We were packing up all our stuff, figuring out where we were gonna live, and had to hit the ground running and make this game," Brad says. "It didn't really seem to affect us as much as we thought it was going to, because everybody was nose to the grindstone. We were all there as many hours as we could be." There were no demands that staff show up on the weekends. "But a lot of people were, because that was the mentality," Brad says. "As a new company trying to prove ourselves, everybody was super focussed on making our first game really good. Or else we wouldn't get to make another game. There were a lot of unspoken stresses."

Los Angeles was chosen partly because it was near Activision HQ, and would allow studio leaders easy access to the producers

DAM GOOD

WHAT MADE CALL OF DUTY SO IMPORTANT?

REEL-ISM

■ Infinity Ward drew on the history of war cinema to evoke both horrors and derring do, the latter reserved primarily for the British campaign.

MOVEMENT TRACKING

■ *Call Of Duty* tracked whether you were standing, crouching, or prone. This bodily focus was inspired by *Counter-Strike* and was crucial to master.

REALISTIC GEAR

■ The development team's artists worked with professional consultants and re-enactors to photograph and recreate the gear of World War II as it was.

STAYING SAFE

■ The vulnerability of your avatar was impossible to ignore. Rather than side-strafing into battle, you were often cowering or scrambling desperately for cover.

BIG BANG

■ New graphical fidelity wasn't used just to impress but to simulate the shocking impacts of the weaponry going off around you.

COMPETITIVE SHOOTING

MEET THE GAMES COD WAS UP AGAINST

MEDAL OF HONOR: PACIFIC ASSAULT

■ After the loss of the *Allied Assault* team to Activision, EA handed the future of *Medal Of Honor* to its LA studio – the one that had birthed the series in the first place. *Pacific Assault* introduced some intriguing features, like squad commands and the ability to be saved from death by your comrades. But it also marked the start of a decline in quality that led EA to abandon *Medal Of Honor* completely.

BATTLEFIELD 1942

■ In the beginning, Infinity Ward and DICE weren't direct competitors. The former valued its single-player campaigns above all else, and the latter developed almost exclusively in multiplayer, offering only bot battles as solo diversions. But with *Medal Of Honor*'s fortunes waning, publisher EA increasingly positioned *Battlefield* as a *COD*-killer – especially after acquiring DICE in 2006.

VIETCONG

■ Publishers were already mindful of the glut of World War II shooters and looking to push into alternate historical settings by 2003. The Vietnam War seemed fertile ground, but reviews of *Vietcong* were mixed, and audiences were unconvinced. Sales were poor in the UK at launch – although the game remained popular in its native Czech Republic long afterwards.

» [PC] You were occasionally tasked with digging out a big gun to deal with a tank.

» [PC] Many players remember Stalingrad and the horribly high cost of victory for the Russians.

» [PC] Controlling a tank was a welcome change of scene, if underdeveloped from a mechanical perspective.

managing the game. But as far as Robert was concerned, Infinity Ward felt like an independent company, with an independent culture. "You wouldn't get the sense that you were working at Activision," he says. "We were insulated from disputes over what was going to happen on the game. That would be Vince and Jason talking with Activision behind closed doors, and we'd be shielded."

To the publisher's credit, it often gave the team space to do their best work. "We weren't getting executives going, 'We want you to put this or that in the game,'" Robert says. "We weren't doing corporate dictates, we were just channelling what we thought was best for the player."

The team at Infinity Ward was already proven, thanks to its work on *Medal Of Honor*. But they were intimidated by EA's series, the monster they'd helped create – not knowing if fans would stick with the name they knew or recognise the pedigree of the team behind *Allied Assault*. "EA had crazy awesome marketing at the time for *Medal Of Honor*," Brad says. "So we would see their commercials coming out, beautiful movie trailer-type things with live action. And we were like, 'Oh, man, that looks so good.'"

As Robert remembers it, the team had been in competition with others for as long as it had existed. "On *Allied Assault*, we were trying to outdo the console *Medal Of Honor*," he says. "For *Call Of Duty*, we were going against EA's *Allied Assault* expansion, *Spearhead*. It's like a bogeyman."

Robert compares the process of pulling *Call Of Duty* together to being in a *Quake* clan.

» [PC] Mission briefings often occurred in-engine, and were delivered by gruffly voice-acted officers.

"Obviously things can go wrong and you start shouting at each other," he says. "And designers are trying to outdo each other with the cool scenes. But you've all got the sense of being on a team working together, pushing each other: 'I'll control that area, you control this.'"

> "ONCE MEDAL OF HONOR: PACIFIC ASSAULT CAME OUT IT WAS LIKE, 'OK, THESE GUYS AREN'T OUR COMPETITION'"
> **ROBERT FIELD**

The push to the end was frantic and exciting. "And then you're just waiting for the reviews to come out," Robert says. "That was the first shot of drugs in the vein." *Call Of Duty* was hailed as a masterpiece, with scores over 90%. "We were just happy that it was well received," Brad says.

The day after launch, Activision acquired Infinity Ward. For a few million dollars, the publisher bagged the studio behind the franchise that has since made it unstoppable. In 2020 alone, *Call Of Duty* made Activision over $3 billion. "They got us for a song," Brad says. "That was a super good business decision."

In 2004, when EA finally did release its answer to *Call Of Duty* "it really wasn't competitive". "We were worried about them because we saw their trailer and they had really cool rendering stuff," Robert says. "But once *Medal Of Honor: Pacific Assault* came out it was like, 'OK, these guys aren't our competition.' They didn't have their act together."

By then, Infinity Ward was already turning its attention toward Bungie, which inspired West and the team to drop medikits in favour of regenerating health for *Call Of Duty 2*. "It was obviously based on *Halo*, because they had their shields," Robert says. "You don't want the game to become this treasure hunt for health packs. You want it to be more about the experience of playing than worrying about your last little bit of health."

The shift reflected a growing concern with approachability. If an Infinity Ward designer was right-handed, they were told to test their level using their left, so that their aim would match that of an unseasoned player.

"We were trying to get maximum sales," Robert says. "You're obviously not trying to do a garbage game, but we really were focussing on getting in as many people as possible. We'd get the receptionist doing playtesting, people who hadn't played games before. Each level designer would have to watch the person play their level without any help, and if they were stuck in some spots, the designer would have to try to fix that."

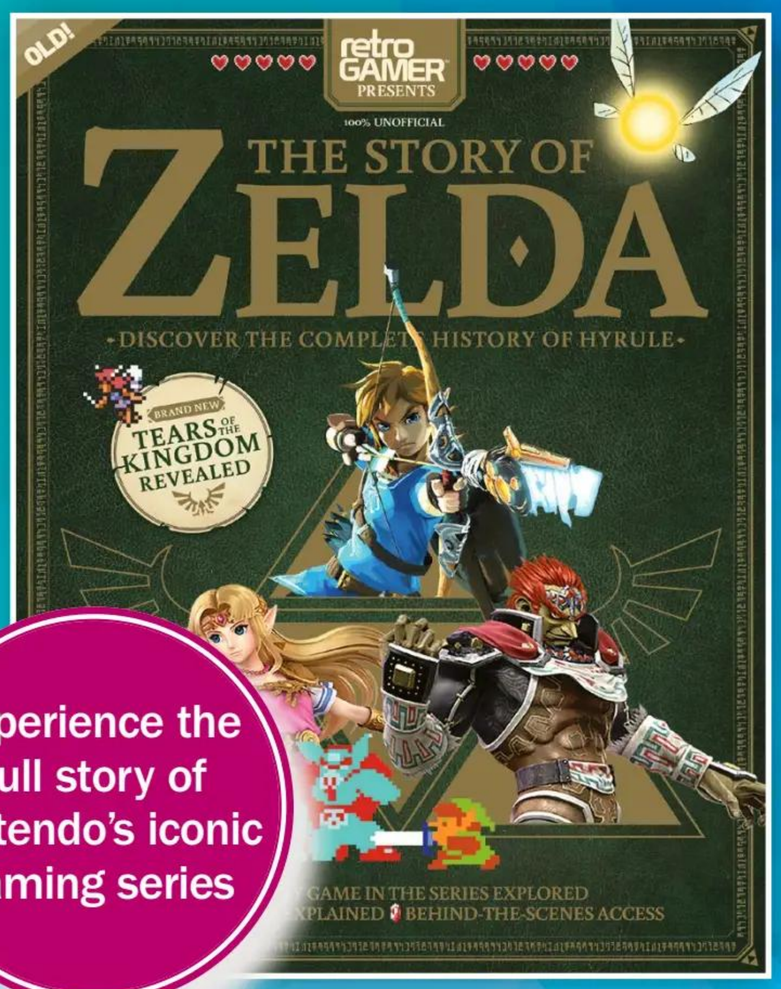
Approachability may have prepared *Call Of Duty* for the big time, but the switch from a historical backdrop to the modern day sealed the deal. "Our designers wanted to push for a new setting, because we were burnt out," Brad says. "As a company, we had made three World War II games, including *Medal Of Honor*. And so we were like, 'Can we change this up? We've been making World War II longer than World War II lasted.'" There was pushback from Activision, who didn't see many successful shooters on the market with contemporary settings, "They really didn't want us to make *Modern Warfare*."

Brad doesn't know what changed the publisher's mind, but the launch of *Modern Warfare* marked Infinity Ward's ascension to the very peak of pop culture. *Call Of Duty* became a water-cooler game, its campaign twists discussed on lunch breaks in schools and offices. It secured the future of the series for many more years to come. "We weren't expecting it," Brad says. "We knew that it was fun, especially the multiplayer – we would stick around late at night and play. But the success of that was ridiculous. It was a cool and fortunate experience – not all companies get to stick together that long." ✱

WARFARE RETURNS

THE CLASSIC FPS GETS REMASTERED

Hardcore fans of the series will know that *Call Of Duty: Modern Warfare III*, a reboot of the popular 2011 game, launched 10 November 2023. Following on from the plot of *Modern Warfare II*, it offers various multiplayer modes, an ambitious open-world Zombies mode and new Open Combat Missions, which will offer players multiple ways to approach objectives. Despite the large amount of new content and vastly improved visuals, the reboot didn't fare well with reviewers and ended up with an average score of 58% on PC, one of the lowest scores for a mainline game in the franchise's history. It will be interesting to see if its lacklustre reception leads to anymore reboots of the popular franchise down the line.



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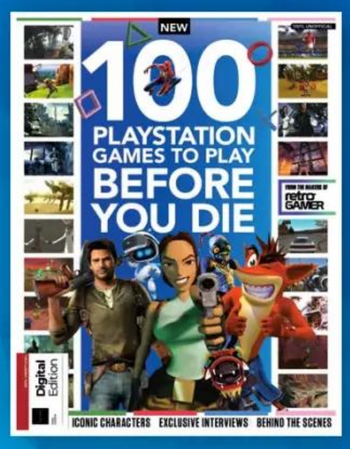

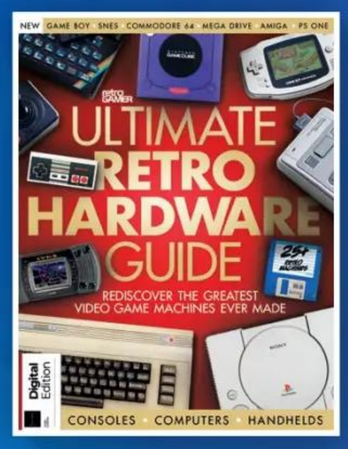
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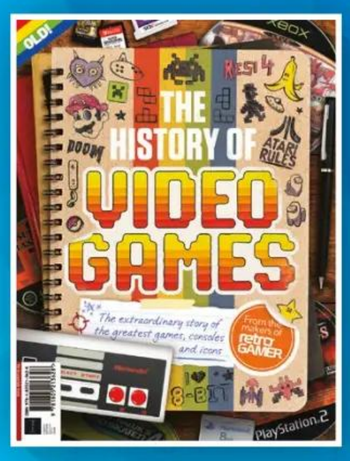
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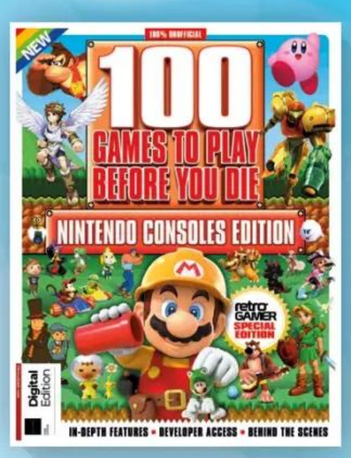
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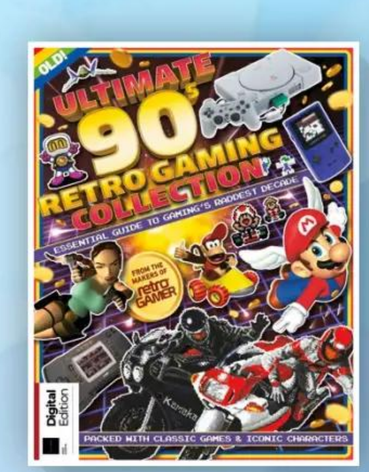
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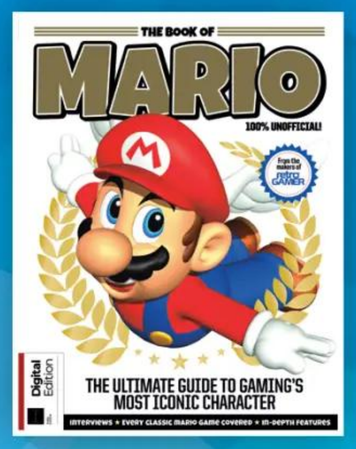

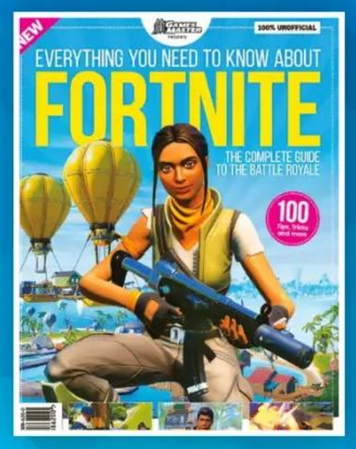

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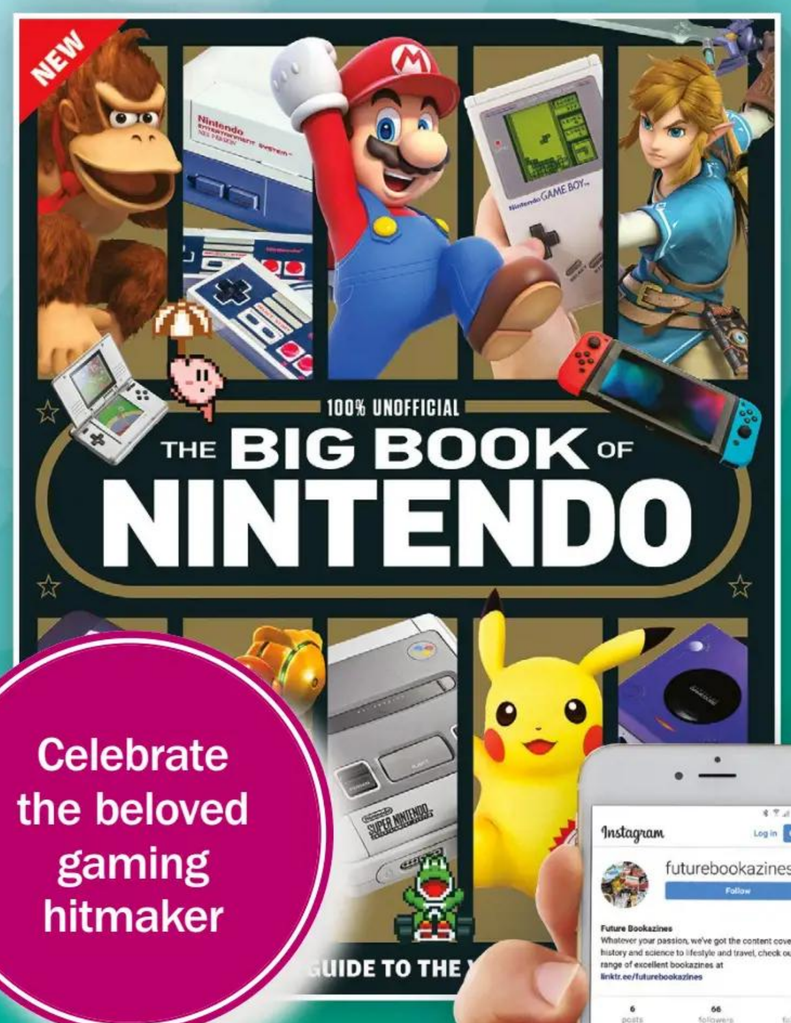

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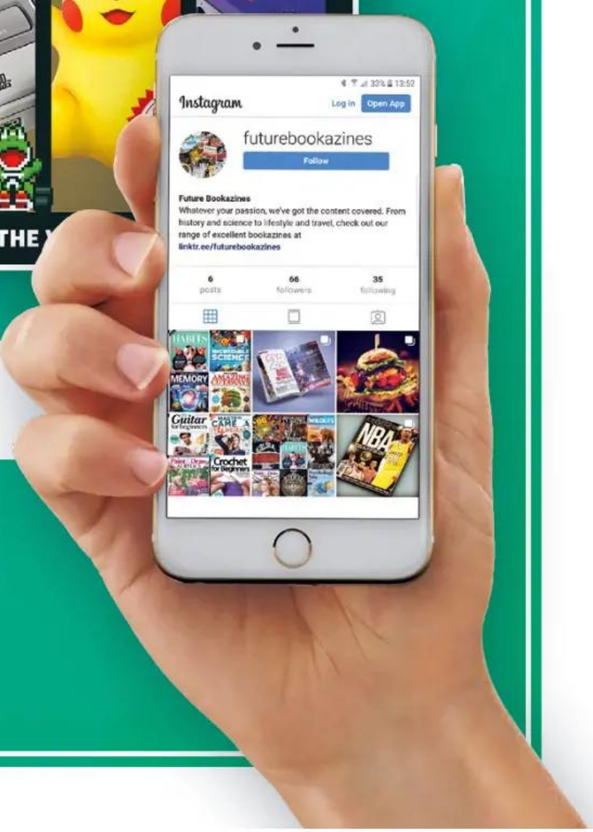

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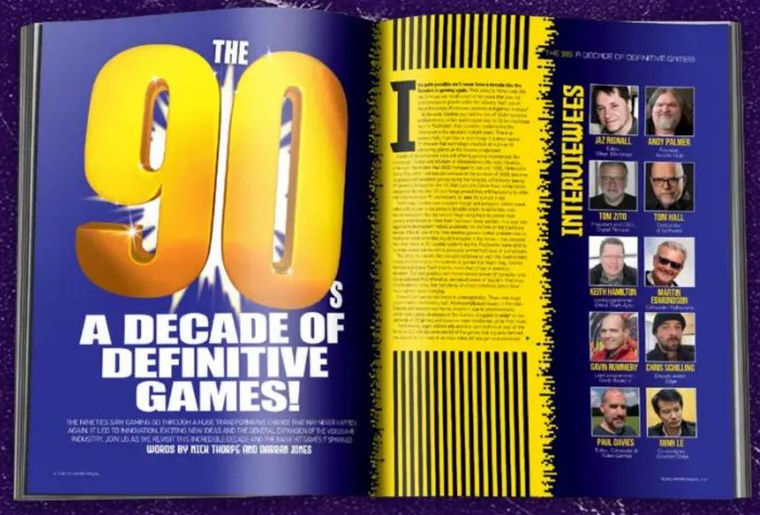

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